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DERMATITIS DUE TO WOODS

CHAIRMAN'S ADDRESS

FRANCIS EUGENE SENEAR, M.D.

CHICAGO

The greatly increased interest manifested in recent years by dermatologists in external irritants as a source of dermatitis, together with the fact that the exhibit of our section for this meeting deals with that topic, has prompted me to select for the subject of my address a source of irritation which is well recognized, but which appears to me to have greater possibilities than is generally recognized.

My interest in this subject was particularly aroused by the following case:

REPORT OF CASE

G. O., a business executive, had been troubled for a number of years with a dermatitis of the hands and feet affecting particularly the toes and palms. He had been treated by a number of dermatologists in New York, Baltimore and Chicago. To his knowledge a fungus had never been recovered from the lesions, and several attempts by me were likewise unsuccessful, so that the eruption can be classed only as a recalcitrant eruption of the hands and feet. On March 18, 1932, he presented himself with a different clinical picture, at this time showing a severe erythematovesicular dermatitis of the face, neck, hands and forearms, with so much accompanying edema that the eyelids were nearly closed. This condition had been present for two weeks. He stated that he had a similar attack on January 14, which was even more severe, as in this earlier outbreak the popliteal spaces were also involved and the chronic dermatitis of the palms was greatly intensified. He was suffering from acute coryza at the time. This dermatitis persisted with varying intensity, but within four weeks was showing some improvement. He then went to Florida, and the acute dermatitis subsided completely within two weeks. He returned to Chicago on March 1, and on March 3 the dermatitis recurred, this being the attack which had persisted until the time he was seen on March 18.

The clinical picture was so obviously that of a dermatitis due to external irritation and the speedy recurrence following his return to his home environment was so suggestive that he was questioned carefully on several occasions, but no contacts of a suggestive nature could be discovered. He was asked about hobbies which might bring him in contact with irritants, and stated that his chief outside interest was in archery. Questioning about the materials used in the targets showed that he did not handle these. By March 31, twelve days after his first visit, the dermatitis had largely subsided, but he returned five days later with a severe recurrence of two days' duration. On this occasion, having had external irritants distinctly in mind during the interim, he volunteered the information that he had been scraping his archery bows just before the last attacks, and then recalled that he had been similarly occupied just before the two preceding attacks as well, and that the exacerbations during these outbreaks had followed the same procedure. He had on his own initiative applied some of the sawdust moistened with water to a relatively uninvolved area on the forearm, and when seen twenty-four hours later showed a strongly positive reaction. This was repeated, the sawdust of white pine being used as a control. The latter gave a negative reaction, while the sawdust from the block of wood from which the bows had been made caused a definitely positive reaction. The dust of the same two woods was soaked in alcohol and the tests repeated with the same result, except that the positive reaction was in this instance much stronger.

The patient stated that when working with the bows he usually perspired freely, and so was asked to apply the dry sawdust to the moist skin when perspiring. He did this a few days later, applying the dust to the left forearm, which was less intensely involved than the right, and after this application the dermatitis became more severe on the left forearm than on the right.

COMMENT

The best archery bows are said to be made from the wood of the yew tree, and it was this wood, imported from England, which had been used in this instance.

The fact that dermatitis due to contact with woods and their dusts may occur is well recognized, but this has applied principally to various exotic tropical woods. Pusey has recently had a case of dermatitis occurring in a carpenter which was found to be due to contact with the sawdust of the common poplar, and Levin lately reported a case in which sawdust used for sweeping was the irritating agent. The wood or woods from which this sawdust was obtained could not be determined in this instance, but it is probable that it came from native woods.

My experience with this case led me to examine the literature dealing with this source of dermatitis, and I was impressed with its wide scope, as evidenced by an abundance of articles dealing with different woods and various phases of the subject. No one of these, however, included all of the woods which have been reported as capable of producing a cutaneous response, or the variety of ways in which the contacts occur.

That this subject is not new is shown by the fact that, according to Toyama,[1] one of the earliest known cutaneous diseases in the Orient was dermatitis due to contact with the milky white juice of Rhus vernicifera, or the Japanese lacquer tree, for as early as the seventh century A. D. a Chinese medical book ("Ping-Yuan-Hon-lun") gave a full description of the disorder. Modern attention, however, seems to date back only to 1893, when Jones[2] described dermatitis among shipyard workers employing exotic woods, and Sternberg[2] reported cases among cabinet makers in Vienna using the same type of woods.

Read before the Section on Dermatology and Syphilology at the Eighty-Fourth Annual Session of the American Medical Association, June 14, 1933.

Owing to lack of space, this paper has been abbreviated by omission of the table listing the woods causing dermatitis and their uses. The table will be included in the author's reprints, which he will be pleased to mail on request.

1. Toyama: Tr. Far Eastern A. Trop. Med. 5:824, 1924.
2. International Labor Office, Geneva, Brochure 22.

The importance of contact with woods and their dusts as a source of dermatitis is attested by the attention given to the subject by various officials in reports dealing with industrial hazards, probably the most important of which is the report on poisonous woods by the International Labor Office at Geneva, and by the fact that in some countries the effects of certain of these woods are brought under the workmen's compensation acts, notably in the case of West African boxwood, the effects of which are brought under the act in Great Britain, British Columbia, New South Wales and Minnesota. In the judgment of the Imperial Insurance Office in Germany, these morbid conditions were regarded as industrial diseases rather than as accidents. Among the woods which have received official attention from the industrial standpoint are coco-bolo, satinwood, teak, mohwah, lemon wood, acacia, Borneo rosewood, olive wood, cocos wood, sabicu and partridge wood.

Because of the industrial aspect, greatest attention has been given to those cases in which the dermatitis has resulted from contact with the dusts produced in working with the woods themselves, but eruptions have occurred from contacts of other types. In several instances proximity to the tree alone is said to be sufficient for the production of a dermatitis, this being the case with Eucalyptus hemiphloia and Eucalyptus maculata,[3] Aroeira [4] and Comocladia dentata.[5] Toyama [1] showed how this may be possible, as 0.0000015 cc. of urishiol, the toxic agent of the lacquer tree, can produce a dermatitis when applied to the skin in a drop of oil, and small amounts of the sap can be carried by wind, dust or insects. Smoke from the burning branches of the mango tree [6] has been recorded as producing dermatitis. Contact with any part of the tree is sufficient in the case of these trees, as well as with the various types of rengas woods. Upwich [7] described an instance in which two companies of soldiers were affected after wading in a river the banks of which were covered with rengas trees, apparently due to contamination of the water by fruit which was exuding latex. Persons living in houses constructed of Aroeira have been affected by the timber, and the use of furniture made from rengas has produced dermatitis, especially when the furniture has become worn. Contact with bark, particularly in stripping, is another method of exposure, as with Eucalyptus macrorhyncus, globulus and hemiphloia,[8] Melaleucas [9] and Brazilian walnut.[10] In some cases the action of the bark is due to the chemicals contained, while in other instances it is said to be merely the mechanical result of the irritating effect of spicules of the rough bark.[11] Handling of either the juices or the wood itself is productive of dermatitis in the case of Anacardiaceae, such as Melanorrhea maingaya and curtisii, Melanochyla auriculata, Glutas, Mangifera kemanga,[12] and Dysoxylon richii and muelleri.[13] Maiden [14] reported dermatitis ("tea itch") from the climbing of trees of the Melaleuca species.

While handling some of the woods in any way may give rise to an eruption, many writers emphasize the fact that other woods are toxic chiefly or only when there is contact with the sawdust or powder, as from sandpapering. This has been noted in regard to macassar wood,[15] teak,[16] Brazilian walnut,[17] blackwood,[6] and Muirapenima.[18] The majority of cases of dermatitis from woods occurs in those whose occupations bring them in contact with the dust and sawdust derived from the woods. The number of woods capable of causing trouble in this way is surprising, although, as is to be expected, there is a marked variation in the frequency with which different woods produce the eruptions, and as a rule the more common offenders are of tropical origin, while the woods of temperate climates are only occasionally at fault. This is probably because trees of temperate climates contain such minute amounts of the toxic agents.[2] Toyama [1] found that in general the toxicity of a wood is proportional to the amount of toxic substance contained, and this explains the reason for the greater irritating effect of the Japanese lacquer tree as compared with other types of lacquer trees, such as those of Formosa, Indo-China and Burma. On this basis it is to be expected that different lots of the same wood might result in a varying incidence of toxic manifestations, and Auld [19] has shown for satinwood that there is great variation in the amount of alkaloid in different specimens. Furthermore, the toxicity of closely related species of wood may vary according to its source, for it has been said [20] that coco-bolo wood from Panama will produce dermatitis, whereas that from Nicaragua will not, and Brigalow itch from handling Acacia harpophylla [21] in Queensland is well known in some parts of the country, and unknown elsewhere.

As one report states, the precise origin of the toxic effects of woods does not seem in general to have been accurately determined. In some cases the irritating factors have, however, been accurately identified. Mathes and Schreiber [12] expressed the belief that irritation from woods is due to nonsaturated resinous acid in a free state, while Czimatis and Hageman [22] stated that from the chemical standpoint resinous oils and alkaloids are responsible. In the case of Hippomane mancinella, a glucosidal substance isolated from the sap seems to be the active poisonous principle. From Peroba amarella [23] a group of irritating alkaloids, called aspidospermine, has been isolated, whereas the resins are secondary factors. The turpentines and essences in the reservoirs and secretory ducts of the hemlock spruce and Norway spruce are blamed. Auld [19] spoke of the resin of Chloroxylon swietenia, or East Indian satinwood, as usually nonirritating, but he has isolated an alkaloid known as chloroxylon as the irritant. The resins may, on the other hand, provoke a dermatitis in those who have been previously irritated by the alkaloid. In the case of cocos wood, a resin is said to be at fault. Iwakawa [24] found that the fissures and cavities of the Tagayasan nut tree contained a sulphur yellow powder from which the irritant substance chrysophanhydroanthron, a substance allied to chrysarobin, was obtained. Brigalow itch is said to be due to a fine yellow powder found in the bark of the Queensland

3. MacPherson, J.: M. J. Australia **2**: 265, 1923.
4. von Bassewitz, E.: Arch. f. Schiffs- u. Tropen- Hyg. **32**: 494 (Oct.) 1928.
5. Pardo-Castello, V.: Dermatitis Venenata: A Study of Tropical Plants Producing Dermatitis, Arch. Dermat. & Syph. **7**: 81 (Jan.) 1923.
6. Simmons, J. S., and Bolin, Z. E.: Am. J. Trop. Med. **1**: 351 (Nov.) 1921.
7. Upwich: Geneesk. tijdschr. v. Nederl.-Indië **34**: 795, 1894.
8. Cleland, J. B.: M. J. Australia **2**: 775 (Dec. 19) 1931.
9. Touton, K.: Dermat. Ztschr. **49**: 385 (Feb.) 1927.
10. Ridley, H. N.: J. Trop. Med. **25**: 225 (July 15) 1922.
11. Hall: M. J. Australia **2**: 481, 1923.
12. Mathes and Schreiber: Ber. d. deutsch. pharm. Gesellsch. **24**: 385, 1914.
13. Maiden: Agric. J. New South Wales **20**: 1072, 1909.
14. Maiden: Agric. J. New South Wales **27**: 39, 1916.
15. Buschke, A.: Deutsche med. Wchnschr. **53**: 1641, 1927.
16. Hoffmann, H.: Zentralbl. f. Gewerbehyg. **3**: 333 (Dec.) 1926.
17. Schwartz, L.: Pub. Health Rep. **46**: 1938 (Aug. 14) 1931.
18. Friese: Arch. f. Gewerbepath. u. Gewerbehyg. **3**: 1, 1932.
19. Auld: J. Chem. Soc. **95**: 964, 1909.
20. Indust. Hyg. Bull. **1**: 11, 1924.
21. Maiden: Agric. J. New South Wales **32**: 206, 1923.
22. Czimatis and Hageman: Hyg. Rundschau **20**: 120, 1910.
23. Touraine and Bernou: Bull. Soc. franç. de dermat. et syph. **39**: 1396 (Nov.) 1932.
24. Iwakawa: Arch. f. exper. Path. u. Pharmakol. **65**: 311, 1911.

maple.[21] Friese [18] incriminated acids, saponins, phenol and alkaloids in the various Brazilian woods.

That a purely mechanical action may be responsible at times is suggested by Blaisdell's [25] statement that it is the dust of the woods continuously ground into the skin, rather than the juices, which causes the trouble, while the *Hardwood Record* [26] reported that workmen in mills where paper birch logs are used often suffer from a cutaneous eruption which is due to the fine powder on the bark. The dermatitis is attributed to the clogging of the follicles and not to any poisonous properties of the bark. Such a factor may be operative in some instances of wood dermatitis, but surely the vast majority of cases are due to the chemicals contained in the woods. In all, I have been able to find about fifty woods in which the nature of the irritant is described, although the exact chemical nature has not been determined in many of these.

As is the case with dermatitis venenata in general, the duration of exposure before the development of sensitivity is variable. Schwartz [17] reported the incidence of dermatitis from the dust of Brazilian walnut in eleven cases, the reactions in the affected persons beginning within from twelve to fourteen days after they started to work with the wood. With satinwood, Gardner's [27] patient was exposed for only one week before dermatitis developed, while Jones [28] reported exposure for six weeks and Meachen [29] for three months. One of Wechselmann's [30] patients required only four days of exposure, while three others, less severely affected, had been exposed for from ten to fourteen days. Maiden [13] reported effects after four days of exposure to Dysoxylon muelleri, MacKee,[31] after two months' work with coco-bolo wood, and Buschke,[15] after five months' work with macassar wood. At the other extreme, Gougerot and Blamoutier's [32] patient had worked with various woods for fifteen years, and with violet ebony, the cause of his eruption, for two years, while MacPherson [33] reported a case of sensitization to Queensland maple in which the patient had been more or less exposed to the wood for twenty years. Brügel and Perutz [34] also reported years of exposure to alderwood before the development of sensitivity. In general, however, the reports indicate that the eruptions usually occur within from a few days to a few weeks after the first exposure to the woods, particularly with the tropical varieties.

In regard to any individual attack, symptoms as a rule follow within a short time. The patient usually has sensations of itching or burning at the time of contact, or a few hours later, and the dermatitis appears on the evening of exposure, or the day following. Crocker [35] reported the development of dermatitis within two hours after exposure to cocos wood. Cash,[36] in an interesting experiment, applied chloroxylon from satinwood to the skin of his forearm with no effect. Ten days later he made a second application, and a dermatitis developed only after twenty-two days had passed. One month later, he again applied the alkaloid, and on this occasion the eruption appeared within forty minutes. He stated that in industrial cases a period of latency of twenty-four hours is usually present before the development of reactions.

In the case of the majority of the woods, the poisonous effects are most intense or present only with freshly cut wood, but this is not the invariable rule. Maiden [13] stated that the seasoned wood of Dysoxylon muelleri is more toxic when seasoned, while Hornsey [37] reported dermatitis in persons who had sat on branches of the rengas which had been cut and dried for months, and the use of this wood for the manufacture of furniture has practically ceased because of the production of symptoms by furniture which has been in use for years. In fact, reactions affecting the mucous membranes were noted particularly when the furniture became old, worn-out and dusty, according to Ridley.[10]

As to the incidence of dermatitis from contact with woods, few figures are available. Schwartz [17] found dermatitis resulting from the dust of Brazilian walnut in 11 of about 100 workers. He communicated with other firms using the wood, and 9 of 10 reported instances of eruptions apparently attributable to the Brazilian walnut, the number of workers affected in the different factories varying from 1 or 2 to a majority, and one firm reported that it had discontinued the use of the wood because of the large number of workers affected. Bassewitz [4] estimated that from 5 to 10 per cent of the population was affected by the wood of Aroeira, a South American tree. Pflanz [38] stated that reactions developed in all workers with moahwood. Ridley [10] found that few if any persons were able to handle the melanorrheas and glutas of the family Anacardiacea without trouble. It is obvious, however, from the relative frequency of reports dealing with such woods as satinwood, that sensitivity occurs frequently with some, while the infrequent or single mention of other woods indicates that reactions to them are exceptional.

Various types of eruptions have resulted from contact with woods and other dusts. Aroeira [4] is said in some instances to give rise to a morbilliform eruption. According to Prosser White,[39] prolonged exposure to the effects of Sarcocephalus diderichae may give a yellow color to the skin and a camphor odor to the breath. Thorns of Buxus semperivirens [40] produce what is termed by Cleland a scaly epithelioma, while splinters of the Australian lancewood are said by Bancroft [41] to have been reported as giving rise to unusually painful wounds, "as bad as a snake bite," but he believed that this is an exaggeration. Brügel and Perutz [34] reported that occasionally the eruption produced by the alder resembles lupus erythematosus. Layet [42] thought that basket makers working with chestnut wood developed herpes labialis from the wood. Sternberg [43] found an urticarial type of eruption from Indian rosewood, and Friese [18] spoke of a "nettle rash" type of eruption from trees of the family Leguminosae. Iwakawa [24] has described a gunpowder-like pigmentation of the skin as one of the effects of the wood of the Tagayasan nut tree. Horand [44] described changes of the skin of the

25. Blaisdell: Urol. & Cutan. Rev. **28**: 665, 1924.
26. Hardwood Rec., Sept. 10, 1932, p. 24.
27. Gardner: Brit. M. J. **1**: 1231, 1908.
28. Jones: Brit. M. J. **1**: 1484, 1904.
29. Meachen: Hospital, London **43**: 625, 1908.
30. Wechselmann: Deutsche med. Wchnschr. **35**: 1389, 1909.
31. MacKee: J. Cutan. Dis. **31**: 582, 1913.
32. Gougerot and Blamoutier: Bull. et mém. Soc. méd. d. hôp. de Paris **46**: 733 (May 5) 1922.
33. MacPherson, J.: M. J. Australia **2**: 542, 1925.
34. Brügel, S., and Perutz, A.: Arch. f. Dermat. u. syph. **153**: 661, 1927.
35. Crocker, H. R.: Disease of the Skin, ed. 3, Philadelphia, P. Blakiston's Son & Co., 1903, p. 418.
36. Cash: Brit. M. J. **2**: 784, 1911.
37. Hornsey: Brit. M. J. **1**: 759, 1914.
38. Pflanz: Med. Klin. **4**: 832, 1908.
39. White, R. Prosser: Occupational Affections of the Skin, ed. 3, London, H. K. Lewis & Co., Ltd., 1928, p. 1929.
40. Touton: Zentralbl. f. Haut.- u. Geschlechtskr. **17**: 713, 1925.
41. Bancroft, quoted by Maiden: Proc. Roy. Soc. New South Wales **53**: 219, 1919.
42. Layet, A.: Hygiène des professiones et des industries, Paris, J. B. Baillière et fils, 1875.
43. Sternberg: Med. Klin. **4**: 479, 1908.
44. Horand: Gaz. d. hôp. **80**: 255, 1907.

hands, aptly described by the term "crocodile hands," which he found common among workers with chestnut, and which he attributed to the action of coloring matter in the bark. The ingestion of the lacquer from Rhus vernicifera gives rise to a scarlatiniform eruption, which Toyama [1] regarded as an indication of a specific effect of the toxin on the skin. The latex of Hippomane mancinella,[5] when fresh, is caustic, as is that of Plumeria rubra, according to Bretin.[45]

All of the foregoing types of eruption are of the specialized and unusual varieties. In the vast majority of cases, on the other hand, the cutaneous reaction is the usual picture of dermatitis venenata, and may present simply an erythema, although as a rule the outbreak is of a more severe grade, with vesicles, bullae and, at times, pustules. Edema is usually an outstanding feature of the attack, and many writers emphasize an erysipelas-like appearance as a striking feature. The follicles are not particularly affected, for only in the case of macassar wood [15] was such a localization cited. As is to be expected, the face, neck, hands and forearms are the sites usually involved, and the genitalia are affected rather frequently. In some instances the dermatitis extends far beyond the contact areas, and may become generalized, as noted with rengas woods by both Hornsey [37] and Ridley,[10] and with macassar wood by Buschke.[15]

The noxious action of practically all woods is increased when the patient is perspiring, and in some instances dermatitis is produced only when the patient's skin is moist. A number of observers have called attention to this, and Ridley,[10] in stating that he believes rengas poisoning affects most those who perspire most, recalled that the poisonous oil in Rhus is converted into a black nontoxic lacquer by alkalis; he stated the belief that when the perspiration is alkaline in reaction, the action of the toxic agent may be prevented by its conversion. An oily skin has likewise been found to be a predisposing factor.[27] In some instances the wood has been noted to be more harmful when moist, as in the case of oak [46] and Brazilian walnut.[47]

With the majority of woods producing dermatitis there are noted reactions in other parts of the body as well. Next to the skin, the mucous membranes are most frequently mentioned. Conjunctivitis with intense lacrimation, at times iridocyclitis and even keratitis,[24] sneezing, increased nasal secretion, epistaxis and pharyngitis are seen in many cases. Involvement of the respiratory system may be evidenced by dyspnea, bronchitis and asthmatic and "influenzal" attacks. Headache, lassitude, dizziness and fainting spells, nausea, vomiting, fever, urinary disturbances and paresthesia are among other symptoms produced, together with palpitation, sweating and chills. The general reactions are particularly severe in those affected by West African boxwood, and at times paralysis of the motor nerve endings results from the action of the alkaloids of this wood. The symptoms of poisoning by jacareuba [18] include dermatitis, thirst and oliguria, and these may be brought back months after an attack by the application of an alcoholic extract of the wood to the skin of the forearm. Friese [18] stated that andiroba produces photophobia and a feeling of heaviness of the limbs, while poisoning with several Brazilian woods of the family Sapotaceae causes falling of the hair. Wechselmann [30] reported insomnia as one of the symptoms of satinwood poisoning. Pardo-Castello [5] stated that the sap of Hippomane mancinella is so toxic that one drop of it placed in a wound on the foot of a rabbit or a guinea-pig causes death within a few minutes. There is a legend to the effect that those who sleep in the shade of the tree do not awaken, and it is known to the natives as the "tree of death." [48] In fact, some of the tropical woods which have not been reported as giving rise to dermatitis may produce these general reactions. Friese, in his report on 626 cases of intoxication from Brazilian woods, found the air passages affected in 184 cases (29.4 per cent), the skin of the hands and feet in 181 (28.9 per cent), the nose and eyes in 163 (26 per cent), the genitalia in 49 (7.8 per cent) and the circulatory system in 49 (7.8 per cent).

Once a person has become sensitized to the woods or their dusts the future course is not always the same. With satinwood Cash [36] said that the affected workers may be divided into classes. In the first, after a primary attack of dermatitis, the affected persons are able to resume the same work without further trouble, while in the second group, relapses occur immediately on the resumption of work, and the men are obliged to abandon the workroom in which satinwood is prepared. Cash himself has not seen any persons who have been able to resume work, but Wechselmann [30] and Jones [28] have recorded such instances. Friese [18] found that patients affected by pao ferro, or others of the family Caesalpinioideae, became increasingly sensitive, while Cabiuna, Aroeira and Gonçalo-alves gradually produced immunity. Schwartz [17] found that some of the men affected by Brazilian walnut, if they continued work, developed a tolerance in a few weeks and recovered completely, while others could not continue. Little [49] commented on the frequency of lacquer dermatitis among foreigners, but found that immunity was acquired by the workers. Practically all apprentices react at first, she stated, but as they continue work the sensitivity diminishes. If they stop work for a few weeks, a slight reaction lasting only a few days occurs on the resumption of the occupation. No immunity to the fig is developed, according to Berlin.[50]

That a sensitivity once developed is often lasting is evidenced by Friese's observation that workers irritated by woods of the Ipe group develop recurrences on resuming work many months later, and John [51] described the case of a worker with dermatitis from teak who had a prompt recurrence on resuming work four years later. Friese also observes that the colored races are more sensitive to the effects of trees of the Ipe group.

Patch tests have furnished valuable aid not only in establishing the diagnosis, but in determining the particular irritants present in the different woods. The moist sawdust is usually sufficient for this purpose, although in some instances it may be necessary to use alcoholic or ethereal extracts. When patch tests are negative, the reaction in some instances may be due to the use of old woods.

There is considerable diversity of opinion as to the nature of the reaction producing the dermatitis and other symptoms. Some writers, as Wechselmann, believe that the condition is distinctly allergic and due

45. Bretin, P. M.: Contribution à l'étude de l'origine végétale de certaines dermatites, Thèse de Lyon, 1909, no. 79.
46. Schulmann, E., and Détouillon, P.: Paris méd. **1**: 55 (Jan. 16) 1932.
47. Mayers, M. R.: Indust. Bull. **11**: 342 (Aug.) 1932.
48. Record and Mell: Timbers of Tropical America, New Haven, Conn., Yale University Press, 1924, p. 371.
49. Little: Brit. M. J. **1**: 1112, 1924.
50. Berlin, C.: Dermat. Wchnschr. **90**: 733 (May 31) 1930.
51. John: Aerztl Sachverst. Ztg. **5**: 100, 1913; quoted by Wechselmann (footnote 30).

to the biologic action on the cells rather than to a chemical irritation, while others, as Low,[52] believe that the sensitization is purely physical or chemical, and that neither immunity nor anaphylaxis in the true or physiologic sense is obtainable. Czimatis and Hageman [22] expressed the belief that in some instances there is idiosyncrasy and in others an anaphylactic hypersensitization; they did not agree with Wechselmann that all cases can be classed as anaphylactic. Brügel and Perutz believed that in the case of alder the reaction was on an allergic rather than a contact basis. Oppenheim reviewed Wechselmann's opinion and felt that further investigation was necessary to prove that the reaction is truly anaphylactic. Touton [53] stated that idiosyncrasy is due to an antibody-antigen reaction, and recalled that Doerr had said that idiosyncrasy is a part of anaphylaxis, and that the experiments of Prausnitz and Kustner have demonstrated this. Several writers, including Lagrange,[54] Brügel and Perutz [34] and Gougerot and Blamoutier,[32] have discussed hemoclastic crises as a result of exposure to woods. In the case of Gougerot and Blamoutier the patient had been working almost exclusively with violet ebony for two years, and with other woods for fifteen years. He took his first vacation in ten years and on returning to work, after an absence of two weeks, developed on the second day a severe dermatitis. After his recovery he was tested with the dust of mahogany and then walnut without result, but within twenty minutes after the application of dust of violet ebony, the leukocytes fell from 8,400 to 6,200. Itching began at the site of application after two and three-fourths hours, and a dermatitis appeared the next day. Following the application of the dust in the form of a patch test, the leukocytes fell from 7,700 to 4,800. Gougerot and Blamoutier felt that they had been able to desensitize their patient by the application to the unbroken skin of an alcoholic tincture of ebony in progressively increasing strength. These writers stated that the anaphylactic nature of the eruption is shown by the clinical evolution of the eruption, by its progressive intensity, a shortened period of incubation and by the leukocytic shock, characterized as the most constant characteristic of the hemoclastic crises.

These various observations should lead one, I believe, to accept the common type of dermatitis due to contact with woods and their dusts as allergic, in line with the conclusions reached by Block, W. Jadassohn and others in their observations dealing with dermatitis venenata, which were so well summarized by Pusey [55] at the last International Congress of Dermatology and Syphilology.

The International Labor Office [2] has recommended hygienic measures to be taken to guard against the toxic effects of woods. It suggests: (1) exhaust ventilation to remove dusts, (2) suitable covers for mechanics working with wood, (3) the wearing of overalls that fit closely about the neck, (4) cleansing of all exposed parts after work and (5) no employment of persons susceptible to the handling of irritant woods.

I have not thus far dealt with the type of dermatitis which is most interesting, particularly because it concerns common woods. This is the "forest essence" dermatitis, or woodcutters' eczema, which has been described in France and Italy. Spillmann,[56] in 1921, described the case of a young forest worker, who, after carrying some logs of oak wood which had been cut some weeks before, developed a dermatitis in the contact areas, and later on the genitalia. The patient's grandfather was similarly affected whenever he handled freshly cut oak, and one of his uncles, as well as numerous other villagers, had presented similar eruptions at various times. Spillmann ruled out contact with plants, but did not think that the oak bark itself could be responsible, and suggested that the eruption might be due to fungi growing on the bark. In 1929, Longin [57] stated that he had seen a case of similar type fifteen years earlier. In that instance the patient was affected only when he entered a forest containing freshly cut wood. The writer stated that the question of other plants being responsible has been ruled out by the fact that patients have been affected while working at home or in lumber yards. Longin emphasized contact with freshly cut wood as important, and declared that the action of the contact is constant, as it is constantly reproduced under the same conditions. Unlike the response to a uniformly irritating plant, as the nettle, he believed that a previous sensitization is necessary in the case of forest essence dermatitis, and that this susceptibility, once established, is persistent, thus constituting an anaphylactic phenomenon analogous to that seen in hay fever. He incriminated the woods of oak, beech and, in one instance, acacia. He stressed the importance of location in diagnosis, the hands, face and genitalia being involved regularly. The dermatitis may vary from simple erythema to a severe vesicular and edematous eruption, most marked on the eyelids and accompanied by conjunctivitis. A masklike leontiasis of the face may result from repeated attacks. In 1931, Dubreuilh [58] stated that he had seen some cases of this disorder, and attributed it to the bark, as boards or the sawdust of the offending woods do not cause any trouble. Oak logs were the causative agents in most of his cases, but chestnut logs were responsible in one instance, and the plane tree in another. He, like Spillmann, did not think that the woods must be freshly cut, as in one of his cases the eruption resulted from handling wood which had been cut and in the open air for one year. He also stated that with a single exception, his patients noticed that the wood caused trouble only when it was moist, attacks occurring on rainy and foggy days, and he believed that this eliminates the theory that the eruption may be due to cocoons on the bark. He confirmed Longin's statement that work in the forests is not necessary, and also pointed out that the eruption may occur without direct contact with the trees, although outbreak takes place much more promptly, beginning within a few hours after contact. He supported Spillmann's contention that the factor of personal susceptibility is predominant, and that this susceptibility, which in his opinion is rare, is perhaps acquired, since many patients have developed it only after many years of immunity. Once established, the sensitivity is persistent and may even increase.

Lagrange [54] described a case of this type which he investigated from the standpoint of conjunctivitis. His patient developed dermatitis and conjunctivitis from the cartage and handling of wood. Following recovery from a severe attack of dermatitis, he used finely pulverized fresh oak bark in a scratch test on the forearm. At the time of the application, the leukocytes numbered 8,400, and two minutes later the count had fallen to 4,200, in seven minutes to 3,600 and in eighteen minutes to 3,400, and in twenty-four hours the patient had

52. Low, quoted by White (footnote 39).
53. Touton: Zentralbl. f. Haut.- u. Geschlechtskr. **21**: 681, 1926.
54. Lagrange, H.: Presse méd. **31**: 112 (Feb. 3) 1923.
55. Pusey: Tr. Internat. Cong. Dermat. & Syph., Copenhagen, 1930.
56. Spillmann, L.: Bull Soc. franç. de dermat. et syph. **28**: 33 (May 8), 1921.
57. Longin, L. A.: Ann. de dermat. et syph. **10**: 178 (Feb.) 1929.
58. Dubreuilh, W.: Ann. de dermat. et syph. **2**: 199 (Feb.) 1931.

a large and pruritic patch of papular dermatitis at the site of the test.

Schulmann and Détouillon,[46] in 1932, pointed out that dermatitis in wooded districts is probably much more common than is supposed, perhaps affecting 2 per cent of the population employed as woodcutters, sawmill workers, cultivators, fuel woodcutters, charcoal burners and hunters. This type of dermatitis develops slowly, is localized to contact regions, but may gradually become generalized, and can be cured readily, often without recurrences if the patients avoid that type of work.

Apart from these cases, however, they recognized another type in which the eruption develops suddenly, and in which recurrences take place on exposure to wood. This type, which they refer to as forest sensitization, is due to a state of sensitivity.

They believed that in the first group, which they call wood itch or woodcutter's eczema, workers having contact with the resins are probably the ones affected, and that the irritant action is chemical in persons with an idiosyncrasy. In the forest sensitization group, on the other hand, the picture suggests an anaphylactic phenomenon, as the outbreak occurs suddenly in a person who usually has worked in the woods for years, although in rare instances the attack may take place on the occasion of a first visit to the woods. Following this the sensitized person develops a recurrence whenever he enters the woods, sometimes even without immediate contact. In these cases the onset of cutaneous changes is preceded by a sense of warmth and by choking sensations.

With regard to the active agent in the production of this type, these writers stated that this has not been determined as yet, but that it seems to be of a volatile nature and soluble in water. They added the poplar and elm to the trees recorded by other authors as capable of causing this reaction.

Drapier [59] and Gougerot [60] have also written on this subject in France, and Tommasi [61] described cases occurring in the province of Sienna, Italy. The latter, in supporting the theory of sensitization, pointed out that workers who return to labor in the woods after a long absence are apt to develop the dermatitis for the first time. In his hands all cutaneous tests to determine the offending agent have proved negative.

There should also be mentioned, in considering the source of eruptions due to contact with woods, those cases due to caterpillars, grubs, cocoons and parasites found on the bark, including mucor, or mucedo, and Aspergillus glaucus, as described by Touton,[9] Cleland,[8] Foot,[62] Hall [11] and others.

SUMMARY AND CONCLUSIONS

A case of dermatitis due to contact with the dust of yew wood is reported.

Dermatitis due to contact with woods or their dusts is relatively common. Woods of tropical origin are most often incriminated, but it is probable that woods of temperate climates give rise to reactions more often than is generally supposed.

Eruptions may arise not only from direct contact, but also from proximity to certain trees and woods.

The majority of cases are seen in those whose occupation furnishes contact with woods or their dusts, and this furnishes an important industrial health problem well recognized by various official bodies.

The toxic agents are most commonly nonsaturated resinous acids in a free state or alkaloids, but other types of chemicals are responsible in some cases.

Development of dermatitis may ensue after contact of from a few days to several years, but in general the eruptions appear after a contact of from a few days to a few weeks.

Freshly cut wood is as a rule most toxic, but in a few instances the wood becomes more toxic on seasoning.

A variety of clinical pictures may result from contact with woods, but the usual reaction is an intense dermatitis venenata, often erysipelas-like, affecting the exposed parts.

Perspiration and seborrhea increase the possibility of reaction.

A number of symptoms due to involvement of other parts of the body, particularly the mucous membranes and the respiratory system, may occur.

In the case of some woods, tolerance may be established, but as a rule sensitivity once established is persistent.

The cutaneous and general reactions may be regarded as an allergic reaction.

Forest essence dermatitis, or wood cutters' eczema of France, is reviewed.

A table of woods capable of giving rise to cutaneous reactions is presented.

59. Drapier: Rev. colon, March 15, 1931, p. 65.
60. Gougerot: Rev. colon, March 15, 1931, p. 68.
61. Tommasi: Gior. ital. di dermat. e sif. **70**: 1223, 1929.
62. Foot, N. C.: J. Exper. Med. **35**: 737 (May) 1922.

TREATMENT OF ACUTE INTESTINAL OBSTRUCTION BY SUCTION WITH THE DUODENAL TUBE

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MINNEAPOLIS

Of the many hollow tubes which serve the body economy, the alimentary canal is the only one which communicates with the surface at both origin and termination. Advantage has long been taken of this arrangement in dealing with the distended intestinal tube by intubation, when the distention was of other than mechanical origin. The rectal tube and gastric lavage are old and well established therapeutic procedures. It is now twenty-four years since Westermann [1] first used the duodenal tube in the relief of postoperative distention of peritonitis. With the introduction of the smooth tipped duodenal tube for nasal intubation by Levin [2] in 1921 and satisfactory demonstration of the source of gas in postoperative distention by McIver and his associates [3] in 1926 as being largely swallowed air, the relief of postoperative distention through employment of the duodenal tube has become a matter of general practice.

From observations made on the drainage of fluid and gas in enterostomies performed for the relief of

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1. Westermann, C. W. J.: Ueber die Anwendung des Dauermagenhebers bei der Nachbehandlung schwerer Peritonitis Fälle, Zentralbl. f. Chir. **37**: 36, 1910.
2. Levin, A. L.: A New Gastroduodenal Catheter, J. A. M. A. **76**: 1007 (April 9) 1921.
3. McIver, M. A.; Benedict, E. B., and Cline, J. W.: Postoperative Gaseous Distention of the Intestine, Arch. Surg. **13**: 588 (Oct.) 1926.

acute mechanical obstruction of adhesive origin, one of us (O. H. W.) was led to attempt decompression in such instances without operation.[4] We have frequently noted in instances of complete obstruction of the small intestine that soon after the release of the distention by enterostomy, even though the adhesive obstructive mechanism is not freed, gas may be demonstrated in the colon on the x-ray film. After such automatic reestablishment of the continuity of the bowel following initial release of the distention by enterostomy, the discharge of gas and fluid through the catheter is often minimal.

INDICATIONS

It is immediately apparent that the type of obstruction in which the method might be expected to succeed are instances in which decompression instituted at some other level in the blocked intestinal tube alone suffices in dealing with the obstruction. For years it has been uniform practice at the Minnesota General Hospital in dealing with late cases of acute adhesive obstruction of a simple nature to perform enterostomy. Only rarely in our experience has it subsequently been necessary to release the obstructing mechanism. Simple types of adhesive obstruction, in consequence, constitute the greatest field of usefulness for the employment of the method. It has been our observation that partial acute obstructions of the small intestine may almost invariably be dealt with satisfactorily by decompression with the duodenal tube alone. In most instances of subacute obstruction, whether in the small intestine or in the colon, suction with the duodenal tube serves adequately in managing the obstructive phase. And in many late cases of simple obstruction of the small intestine in which the obstructive mechanism continues to operate, initial decompression with the duodenal catheter serves to improve the patient as an operative risk.

CONTRAINDICATIONS

From theoretical considerations there are two types of obstruction in which the use of the method is contraindicated, viz.: (1) strangulation obstruction, and (2) acute obstructions of the descending colon with enormous distention of the proximal colon. The latter type is essentially a strangulation obstruction in that the competent proximal ileocolic sphincter usually precludes regurgitation into the small intestine and limits the distention to the colon, necrosis, gangrene and perforation occurring in the cecum (the most distensible portion of the colon) unless the colon itself is decompressed.

TABLE 1.—*Classification and Treatment of Intestinal Obstructions*

Clinical Classification	Pathologic Classification	Treatment
A. Mechanical I. Narrowing of lumen 1. Strictures of bowel wall a. Congenital: Atresia ↓ ↑ Imperforate anus b. Acquired: Inflammatory, Traumatic ↓ ↑ Vascular, Neoplastic 2. Obturation 3. Compression from without (Especially pelvis and retroperitoneal duodenum)	Simple (except in neoplastic strictures of the colon)	Operation, preceded by suction for decompression in late cases except in occlusion of the descending colon
II. Adhesive bands: Congenital, Inflammatory, Traumatic, Neoplastic	Simple or strangulation	Suction, operation for persistent obstruction and in strangulation
III. Hernia 1. External 2. Internal IV. Volvulus V. Intussusception	Strangulation	Early operation
B. Nervous I. Inhibition ileus—(Paralytic) adynamic II. Spastic ileus—Dynamic	Simple	Suction
C. Vascular I. Thrombosis and embolism of mesenteric vessels II. Severance or injury of mesenteric vessels (Operative or blunt trauma)	Strangulation	Early operation

Apart from these absolute contraindications to attempts at decompression of the obstructed bowel with duodenal suction alone, there are a number of relative contraindications. In instances of obstruction due to strictures in the intestine, whether of simple or malignant nature, it is obvious that a direct attack must be made on the obstructive mechanism, no matter whether or not decompression of the acute obstruction can be effected by the duodenal catheter. In instances of complete adhesive obstruction of the lower portion of the small intestine decompression by the duodenal tube alone may fail, and after a reasonable trial with suction, if x-ray films do not demonstrate definite diminution in distention, recourse should be had to enterostomy. The appearance of gas in the colon in a complete obstruction indicates not only a satisfactory decompression but also the automatic reestablishment of the continuity of the bowel.

RECOGNITION OF OBSTRUCTION OF THE BOWEL

In the occurrence of loud intestinal borborygmi heard with the stethoscope at the acme of intermittent crampy

4. Wangensteen, O. H.: The Early Diagnosis of Acute Intestinal Obstruction with Comments on Pathology and Treatment, with a Report of Successful Decompression of Three Cases of Mechanical Bowel Obstruction by Nasal Catheter Suction-Siphonage, West. J. Surg. **40**: 1 (Jan.) 1932; Tr. West. S. Soc., 1931.

pain, the presence of intestinal colic is established. Though intestinal noises may be heard now and then in other colics or acute lesions of the abdomen, there is no intimate time relation between pain and borborygmi as there is in obstruction of the bowel. Having established the presence of intestinal colic, it remains to be determined whether it is due to organic obstruction of the bowel, food indiscretions, acute enterocolitis or abdominal allergic reactions. On the basis of such general symptoms as the absence or presence of fever, vomiting, diarrhea or progression of symptoms, together with an appraisal of an x-ray film of the abdomen, a differential diagnosis can readily be made.

The diagnosis of acute intestinal obstruction has been discussed at length elsewhere,[5] and only the salient features will be related here. Vomiting is usually a prominent symptom in all acute obstructions of the small intestine; that the conspicuous vomiting of obstruction is essentially regurgitant is indicated in its frequent absence in acute obstructions of the descending colon in which, as has already been stated, the small intestine often does not participate in the distention. Instances of simple obstruction ordinarily present no tenderness or rigidity of the abdominal wall. In strangulation obstructions, with the single exception of intussusception in which the strangulated intestine is within the normal ensheathing cylinder, rebound tenderness may be demonstrated.[6] In simple obstructions the general condition of the patient is not disturbed till late in the course of the obstruction. The pulse and temperature are usually normal. Patients with strangulation obstruction occasionally exhibit quickening of the pulse early in its course incident to the loss of blood into the peritoneal cavity as well as into the infarcted segment of intestine. With continued vomiting, leukocytosis and occasionally elevation of temperature occur. Diminution of the plasma chlorides, elevation of the nonprotein nitrogen in the blood and an alkalosis occur consistently only in high obstructions and then only after persistent vomiting of about forty-eight hours' duration. These occurrences therefore are of no diagnostic value.

Fig. 1.—A film of the abdomen of a patient with intestinal colic. Limitation of the distention to the colon indicates the presence of an obstructive lesion in the sigmoid flexure (carcinoma). Suction-siphonage by nasal catheter is contraindicated in this type of case. Immediate decompression of the colon should be done.

IDENTIFICATION OF TYPE OF OBSTRUCTION

When correlated with the clinical signs, the x-ray film is an aid of value not only in determining the presence of obstruction but also in deciding its location as well as in the decision as to whether the obstruction is complete or incomplete. In the alimentary canal of the adult, though gas is normally present throughout, it is visualized on the x-ray film only in the stomach and colon. In the small intestine, the interadmixture between gas and fluid is so intimate that gas cannot be seen except under conditions of stasis when gas and fluid tend to separate out. The visualization of gas in the small intestine of the adult is therefore synonymous with stasis. The stethoscope tells whether it is mechanical or inhibitive (paralytic).

A single x-ray film taken with the patient supine gives more information than plates taken in any other position. It reveals the grade of intestinal distention present and affords fairly reliable evidence as to its location. Roentgen studies made with an enema of barium sulphate, though of great value in subacute and chronic obstructions, are unnecessary and are contraindicated in acute obstructions except in intestinal atresia and where the conjectured presence of an obstruction in the descending colon would appear to need verification by an enema of barium sulphate. In a patient having intestinal colic in whose bowel the distention involves and is limited solely to the colon, as indicated in a film of the abdomen (fig. 1), the diagnosis of obstruction in the descending colon is practically established. If loops of small intestine are distended but gas is also present in the colon, the patient in all likelihood has a partial obstruction of the small intestine (fig. 2 *A*). Almost invariably by the time that the patient with suspected obstruction of the bowel presents himself for roentgen examination, several enemas have been administered, and the persistence of gas in the colon in a patient whose distention is in the small intestine indicates that the obstruction of the small intestine is incomplete. Distention of the small intestine alone without visible gas in the colon means that the obstruction is complete (fig. 3 *A*).

From inspection of the roentgen film of the abdomen, one cannot predict the exact location of an obstruction in the small intestine with the same precision as in the colon. Knowing the normal pattern of distribution of the intestinal coils, as described by Mall,[7] it would appear that the location of the distended coils would indicate where the obstruction is. The factors that prejudice exact determination of the location of the obstruction by interpretation of the roentgen film are probably these: (1) the shortening of the bowel with obstruction; (2) the increased weight of coils of bowel incident to the collection of fluid within them altering the relative position of heavy coils to their neighbors, the extent of this displacement being limited by the length of the mesentery, and (3) the distribution of gas and fluid within the distended coils; gaseous collections will be readily apparent, whereas a segment of intestine distended by fluid only cannot be detected. On the whole, however, it may be determined with fair accuracy whether the obstruction is in the upper, lower or middle third of the small intestine.

The exact nature of an obstruction is, moreover, less readily determined than its location. In the majority of instances, however, the type of obstruction present can be ascertained with a fair degree of accuracy by correlation of the history, physical signs and the roentgen observations. The correct identification of the precise type of strangulation obstruction present, even

5. Wangensteen, O. H.: Elaboration of Criteria upon Which Early Diagnosis of Acute Intestinal Obstruction May Be Made, with Special Consideration of Value of X-Ray Evidence, Radiology **17**: 44 (July) 1931; The Diagnosis and Treatment of Acute Intestinal Obstruction, Northwest Med. **30**: 389 (Sept.) 1931.

6. The grade of rigidity present in acute abdominal lesions is dependent on the character of the irritant. Hydrochloric acid is a severe irritant, and the greatest rigidity of the abdominal wall observed clinically follows perforation of an ulcer of the duodenum. Perforation of the colon is not attended by such emphatic reflex spasms of the abdominal muscles. When blood escapes into the peritoneal cavity accompanying a strangulation obstruction or in a ruptured tubal pregnancy, a grade of abdominal tenderness and rigidity that is distinctly less developed than in suppurative lesions is usually observed.

7. Mall, F. P.: Position of the Intestines, Bull. Johns Hopkins Hosp. **9**: 90, 1898.

though it may be determined with considerable accuracy, is not of the same moment as the recognition of the type of simple obstruction in that surgical intervention is mandatory in all potential strangulation obstructions. The only strangulation obstruction which may escape detection of the existence of compromise of its blood supply are pure enteric intussusceptions. The colic as well as the ileocolic, ileocecal and compound (entro-enteric and colonic) invaginations may be recognized even though the precise type present may not be foretold.

Of the simple obstructions, the type of obstructing mechanism present can usually be correctly identified. There are, of course, notable exceptions, as, for example, obstruction of the intestine by a foreign body such as a gallstone, packet of worms or other foreign body. Strictures of the small intestine, whether benign or malignant, may be difficult to identify exactly, but the subacute character of the obstruction, the history, the presence of palpable and visible peristalsis and the occurrence of dilated loops of small intestine as observed on the roentgen film, without serious disturbance of the motility of the small intestine as determined by a barium stasis ray, have sufficed to establish the diagnosis in the few instances that have come under our observation.

As has already been indicated, adhesive obstruction constitutes essentially the important field for decompression with suction-siphonage applied to a duodenal tube. In patients who have previously been operated on, the recognition of the adhesive character of the obstruction is usually readily accomplished. Often the diagnosis may be made over the telephone. Though we have obtained successful decompression in instances of suspected adhesive obstruction of a simple nature in patients who have not presented scars on their abdomens, we have always done so with hesitation and would advocate the procedure in such instances only in partial obstructions. Serious doubt as to the character of the obstruction is indication for determining its nature by operation.

It must also be freely admitted that the exact manner in which an adhesive band kinks the bowel cannot be comprehended without a deliberate exposure of it at operation. The most significant item, however, is definite separation of instances of simple adhesive obstruction from actual or potential strangulations. The presence of actual strangulation, we believe, is invariably heralded by the presence of local physical signs such as rigidity and rebound tenderness. That potential strangulations, such as complete encirclement of a loop of intestine by a fibrous strand without compromise of the blood supply (that is, without hemorrhage into the intestine or discoloration of its wall) may be confused with simple obstruction is readily understandable. When fluid and gas make their way into and distend this incarcerated loop, however, the strangulation features will come into evidence as the blood supply becomes compromised.

MECHANICS AND TECHNIC OF DECOMPRESSION BY SUCTION-SIPHONAGE BY NASAL CATHETER

The rationale of relief of mechanical obstruction with the duodenal tube is adequately explained in that decompression of the distended intestine by enterostomy in the majority of instances of simple adhesive obstruction permits the intestine to reestablish the continuity of the intestinal lumen automatically. It is immediately apparent that the nearer the drainage vent is placed to the site of obstruction the more adequate and complete is the decompression. One distinct advantage of enterostomy over suction-siphonage by nasal catheter is that the intestinal canal above the obstruction may be used as a nutritive tube during the interval while the continuity of the intestinal canal is being reestablished. Attempts at feeding before the obstructive mechanism has relented, when decompression is effected by the duodenal tube, usually results in recurrence of the obstruction.

The small intestine of the adult is an elastic tube of about 20 or more feet in length. The activity of the pyloric sphincter interrupts the continuity of the stomach and small intestine as a single simple tube. Not uncommonly, however, this sphincter fails to present a physiologic block for decompression of the small intestine by suction when the tip of the duodenal tube

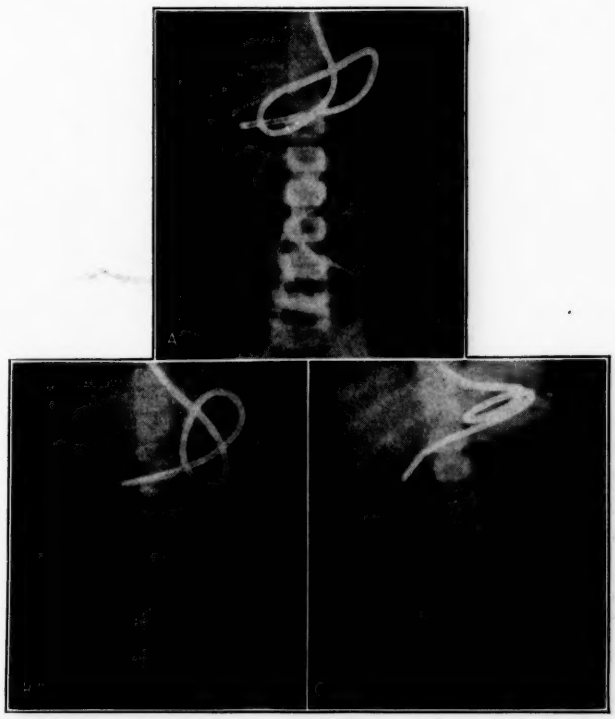

Fig. 2.—*A*, film of the abdomen of a boy of 8 with incomplete adhesive obstruction. The small intestine is greatly distended but there is gas in the colon (two scybalous masses may also be seen in the hepatic flexure). *B*, film after seven hours of suction; the duodenal tube is about to enter the pylorus. *C*, decompression is practically complete after twenty hours. Small gaseous collections are still present but no intestinal loops are distended.

is in the stomach. A successful decompression of the obstructed small intestine is more certain if the catheter finds its way through the pylorus into the duodenum. We have made it routine practice, therefore, to cut extra holes in the duodenal tube as far back as 10 inches proximal to the tip of the catheter. With the end of the catheter in the duodenum, continuous suction may then be executed simultaneously on both intestinal canal and stomach. It occasionally takes some time for the catheter to enter the duodenum. We have recently been employing a special catheter with a rubber of heavier specific gravity near the tip. After emptying the stomach by suction, we have occasionally been able to intubate the duodenum directly with this catheter. Now and then we have had the patient inhale the fumes of broken pearls of amyl nitrite in an attempt to relax the pyloric sphincter.

In the intestine of the intact dog or in the human intestine excised at necropsy, it may readily be demonstrated, following the introduction of air or water into the intestine, that the exertion of suction on one end is immediately appreciated in the same degree at the other end. When, however, a mixture of gas and fluid is present, the difficulty well known to physicists whether dealing with rigid or elastic tubes comes into play. In simple gaseous or fluid distention, the entire intestine may be decompressed almost at once. When segments are found alternately distended with gas and fluid, decompression will be only slowly effected.

The churning action of a turbulent intestine, alteration in the relative position of the coils of intestine as may be obtained by change of posture and massage of the abdominal wall, serve to disarrange the existing collections of gas and fluid within the intestine and facilitate decompression.

The degree of suction which may be advantageously utilized in an elastic tube is limited by the engagement

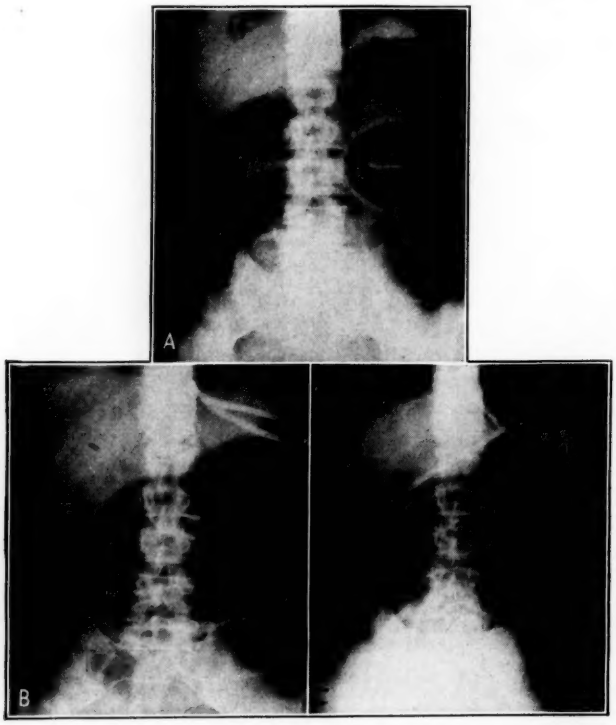

Fig. 3.—Series of flat abdominal x-ray plates made on a patient with complete obstruction of the small intestine due to adhesions to show course of decompression with suction-siphonage by nasal catheter. *A*, initial plate shows considerable distention of small intestine. There is no gas in the colon. *B*, a duodenal tube has been inserted and suction has been applied for twenty-two hours. The stomach is empty and the intestinal distention is somewhat less. The patient has been relieved of all distress. *C*, twenty-nine hours after the institution of suction the duodenal tube has passed well into the duodenum and decompression is proceeding rapidly.

of the wall of the intestine in the hole of the catheter where the suction is applied. Even with mild suction, this phenomenon may be demonstrated. We believe that 75 cm. of water suction lies within the range of the optimum value.[8]

The time element also affects this issue favorably. The important agents in causing distention of the blocked bowel are swallowed air and fluid emptied into the upper reaches of the intestinal canal. Accretion of intestinal distention being precluded by continuous removal of these by the duodenal tube, absorption of fluid from the distended intestine occurs, resulting in confluence of gaseous increments which may then more easily be removed by suction.

In the employment of suction applied to a duodenal tube in the treatment of mechanical obstruction it is important to follow the decompression by x-ray films made at the bedside. Augmentation of the distention no longer occurring because of the removal of swallowed air and fluid excreted into the stomach and duodenum, the intermittent crampy pain usually stops as soon as suction is commenced, although every vestige of discomfort usually does not subside for some time. The bowel having accommodated itself to a certain grade of distention, no pain will be appreciated if there is no increase in distention. Mere cessation of pain, therefore, does not mean a successful issue. Narcotics or sedatives for the relief of pain are deliberately avoided. Hot packs, however, are employed as a routine measure over the abdomen. The amounts of gas and fluid aspirated give some indication as to how the decompression is progressing, but the only reliable evidence is diminution in caliber of the distended intestinal coils. The appearance of gas in the colon in complete obstruction of the small intestine indicates that the obstructive mechanism has relented.

ADMINISTRATION OF FLUID

The detail of the technic of the insertion of the tube and its general management are elsewhere described.[9] In patients with mechanical obstruction no fluid is permitted by mouth during the time that suction is in force. Fluids are given para-orally in sufficient amounts to provide a liberal daily output of urine (from 800 to 1,000 cc. urine per twenty-four hours). From 3,000 to 4,000 cc. of 5 per cent dextrose in physiologic solution of sodium chloride usually suffices, given intravenously by the slow drip method. The patient is permitted to suck ice, chew gum or a lemon to stimulate the flow of saliva. Accurate measurements of the fluid and gas removed are always kept. Dechlorination will not occur as long as a liberal output of urine is maintained.

The group of cases in which suction applied to a duodenal tube was employed as the primary mode of treatment has been subdivided into three classes for purposes of analysis, viz.: (1) those in which decompression was done by suction alone without subsequent operative attack on the obstructing mechanism; (2) those in which decompression was done by suction but operation was subsequently performed because of the conjectured persistence of the obstructing mechanism, and (3) those in which treatment with suction was employed but in which operation was necessary to effect complete decompression.

The total number of patients treated primarily by suction is thirty-two. Among this number there were six with recurrences on separate admissions, making a total of thirty-eight decompressions. During this interval, in only nine patients with acute mechanical obstruction of the small intestine was primary operation done. Of this number seven had strangulated external hernias (inguinal and femoral); of the remaining two, one had a stricture of the intestine and the other presented unmistakable signs of internal strangulation.

8. Paine, J. R., and Wangensteen, O. H.: Necessity for the Application of Constant Suction to Inlying Nasal Tubes for Effectual Decompression or Drainage of the Upper Gastro-Intestinal Tract with Comments upon Drainage of Other Body Cavities, Surg., Gynec. & Obst., to be published.

9. Wangensteen, O. H., and Paine, J. R.: Nasal Catheter Suction-Siphonage: Its Uses and Technique of Its Employment, Minnesota Med. **16**: 96 (Feb.) 1933.

The latter case was the only fatal one in the group in which primary operation was done.

The patient was a feeble old lady of 69 years who presented intestinal colic and rebound tenderness. The strangulation had been present for somewhat more than forty hours. The gangrenous segment was exteriorized, and the devitalized intestine was cut away and catheters were fastened into each loop after the skin was closed. The operation, which was done under spinal anesthesia (125 mg. of procaine crystals), was completed without event, and just as the wound was being closed the patient stopped breathing. She was resuscitated by artificial respiration but died two days later without having regained consciousness.

There were twenty cases in which decompression by suction alone was done. In this group there were three deaths, two of which occurred some time after decompression had established the continuity of the intestine due to causes unrelated to the obstruction. The remaining death in this group, which is directly attributable to obstruction of the bowel, occurred because we failed to operate. The nature of the obstruction was fully appreciated, but it was believed that the patient's chances were better with conservative treatment until her general condition became more satisfactory. Undoubtedly, after the initial decompression, it would have been wiser to have assumed the risk of operation, knowing the hazard of permitting the gallstones to remain within the lumen of the intestine.

The patient, aged 66, was very ill on admission, the picture of obstruction being complicated by the presence of a large sloughing bed sore over the sacrum; the entire gallbladder had sloughed into the intestine and the obstructing packet of gallstones lodged in about the midportion of the intestine never changed their position, as frequent subsequent roentgen examination indicated. A partial decompression was effected two hours after the commencement of suction and was complete in forty-eight hours. The patient was free from distress two hours after suction was started. Alternate suction and feeding were continued through the tube for seven weeks, the patient meanwhile improving. Death was due to perforation of the intestine by the gallbladder and its contained stones. An obviously necessary operation was deferred because of the generally poor condition of the patient. Timely operative intervention might have saved the issue.

TABLE 2.—*Summary of Mortality of Acute Mechanical Obstruction of Small Intestine*

	Number of Cases	Deaths	Mortality, per Cent	Deaths Unrelated to Obstruction	Corrected Mortality, per Cent
A. Treatment by suction-siphonage with nasal catheter					
1. Decompression by suction alone	20	3	15.0	2	5.0
2. Decompression by suction, but with subsequent operation performed on obstructing mechanism	11	1	9.0	0	9.0
3. Treatment by suction initially, but operation necessary to effect complete decompression	7	3	42.8	0	42.8
Total mortality in groups with suction					
Patient mortality	32	7	21.9	2	15.6
Case mortality	38	7	18.4	2	13.1
B. Treatment by immediate operation	9	1	11.1	0	11.1
C. Other cases					
1. Manual reduction of strangulated hernia	1	0	0.0	0	0.0
2. Patients moribund on admission	3	3	100.0	0	100.0
Total mortality by patients	45	11	24.4		
Total mortality by cases	51	11	21.5		

There were eleven cases in which decompression was done by suction but operation subsequently performed because of the conjectured persistence of an obstructing mechanism which was continuing to operate. There was one death in this series, the patient dying of pulmonary embolism seven days after operation.

The poorest results were obtained in the third group, in which treatment was begun with suction but in which operation became necessary to effect a complete decompression. Of seven such cases, three were fatal, making a mortality of 42.87 per cent. Two of the patients died, however, because of ill chosen surgical measures for which one of us (O. H. W.) accepts full responsibility. Judging from the nature of the obstruction, as found at operation, we believe that both these patients would have gotten well had conservative treatment been persisted in, or had simple enterostomy alone been done at operation instead of freeing the adhesive mechanism. Undoubtedly one of the chief factors in the continuance of the persistently high mortality of acute obstruction is this anxiety on the part of the operating surgeon to do the operation of election, viz.: to undo the obstructive mechanism and restore the continuity of the intestine at once. One can really appreciate, however, that, when a short band has obstructed the intestine for a few days, it frequently becomes actually fused with the intestine, and an attempt to liberate it results in opening of the intestine. Our experience has been that spillage of intestinal content, even though minimal in amount, in acute obstruction usually foreshadows death from peritonitis.[10] The other death in this group was that of a young Mexican woman who was six months pregnant. She had not been operated on previously, and the nature of the obstructing mechanism remained in doubt. At operation a small viable enteric intussusception was found and easily reduced; still the patient died of peritonitis three days later.

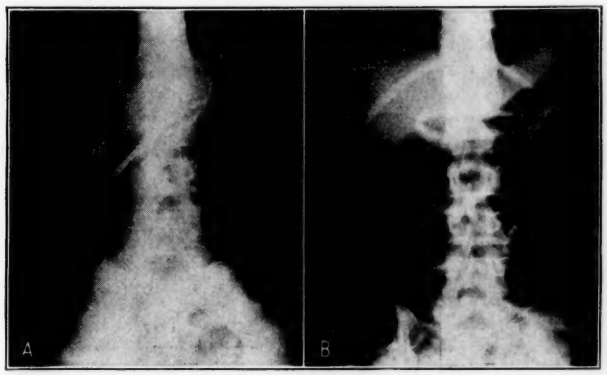

Fig. 4.—Continuation of series in figure 3. *A*, decompression is fairly complete after fifty-five hours. At this time the duodenal tube was clamped at intervals and clear fluids given orally. *B*, plate taken eleven hours later. There is considerable gas in the cecum and ascending colon, indicating that the obstructive mechanism has relented. There are still a few coils of distended small intestine. The patient has had no intestinal colic since.

On the whole, the group of cases in which subsequent operation is necessary on the obstructive mechanism after satisfactory decompression has been achieved are constituted largely by instances of universal adhesions and strictures of the intestine itself. There have been a few instances of adhesive obstruction in which recurrent attacks indicated the necessity of operation

10. Wangensteen, O. H.: Therapeutic Considerations in the Management of Acute Intestinal Obstruction: The Technic of Enterostomy and a Further Account of Decompression by the Employment of Nasal Catheter Suction-Siphonage, Arch. Surg. **26**: 933 (June) 1933.

at which only single bands were found. Such instances, in our experience, have not been numerous. On the contrary, it has been remarkable to note how many patients with obstruction of adhesive origin of severe grade have been well without any suggestion of obstructive features after decompression by suction.

In those instances in which a satisfactory and complete decompression was achieved only after the elapse of considerable time (forty-eight hours and more), we failed to observe any manifestations of a toxic influence. Almost invariably the patients ceased to complain of intestinal colic soon after the commencement of suction, although frequently several hours elapsed before the patient was entirely free from distress. There was no acceleration of the pulse; on the contrary, if it had been somewhat hurried on admission

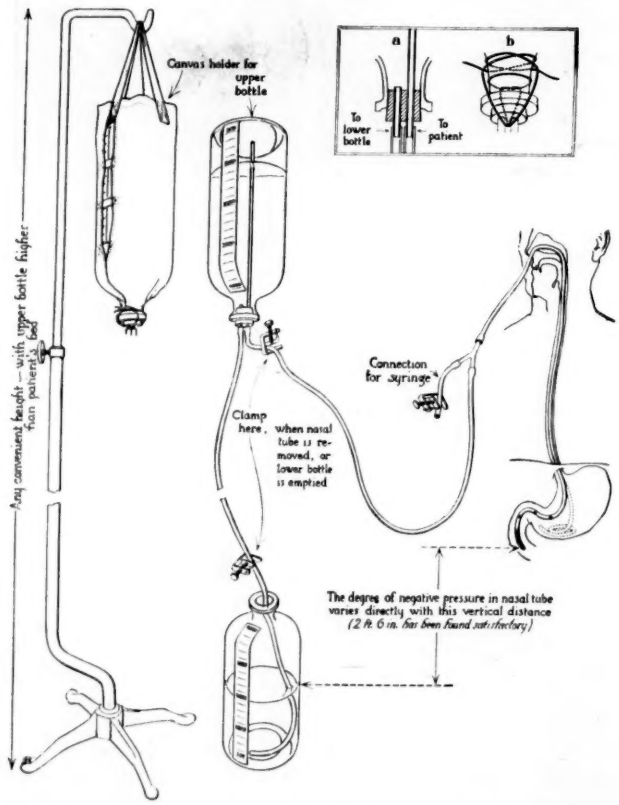
Canvas holder for upper bottle
a
b
To lower bottle
To patient
Any convenient height — with upper bottle higher than patient's bed
Connection for syringe
Clamp here, when nasal tube is removed, or lower bottle is emptied
The degree of negative pressure in nasal tube varies directly with this vertical distance
(2 ft. 6 in. has been found satisfactory)

Fig. 5.—Diagram of suction apparatus used at the Minnesota General Hospital. The upper bottle is hung by a canvas sling from an irrigation standard. The lower bottle rests on the floor. A Y connection is attached to the duodenal tube so that a syringe may be conveniently used to clear the tube if it becomes plugged. (The C. F. Anderson Company, 214 South Seventh Street, Minneapolis, assembles this apparatus for distribution.)

before the institution of suction, it became slowed as the decompression progressed. The general appearance and aspect of the patient usually exhibited improvement commensurate with the diminution of intestinal distention. Even in those instances in which suction was persisted in for some considerable time (group III) but in which a fairly satisfactory decompression failed to establish automatically the continuity of the intestine, necessitating resort to operative intervention, there was no suggestion in the patients' appearance or objective signs to indicate a decline in their general well-being.

SUMMARY AND CONCLUSIONS

Suction-siphonage by nasal catheter constitutes a satisfactory manner of dealing with many instances of acute mechanical intestinal obstruction. Decompression with the duodenal tube unaided by other therapeutic measures is recommended for simple obstruction of the small intestine only. The adhesive variety of obstruction in which the establishment of enterostomy permits of automatic reestablishment of the continuity of the bowel is particularly suitable for decompression with the duodenal tube. Strangulation obstruction in which the blood supply of the intestine is compromised and instances of acute obstruction of the descending colon in which the small intestine usually does not participate in the distention are contraindications to the use of the method. Most partial or incomplete mechanical obstructions of the small intestine can be adequately decompressed by this means alone. Some of these will necessitate a subsequent direct attack on the obstructing mechanism itself. In complete obstructions of the small intestine in which the obstructing mechanism does not relent after an adequate trial with suction, recourse should be had to operation (enterostomy).

A diagnosis of obstruction and determination of whether simple or strangulation obstruction is present can be made in most instances with a high degree of accuracy. Whenever there is serious doubt concerning the nature of the obstructing mechanism, operation should be done. The only adequate manner of ascertaining whether a decompression is being obtained is by taking subsequent x-ray films at the bedside.

The true value of suction-siphonage by nasal catheter in the treatment of acute mechanical intestinal obstruction will become apparent only when the method has been given wide clinical trial.

ABSTRACT OF DISCUSSION

DR. ERWIN R. SCHMIDT, Madison, Wis.: About a year and a half ago I had an opportunity to watch this method and since then it has been instituted at the University of Wisconsin. I can subscribe to everything that the authors have said. There are certain things that I can add from experience. We have used continuous negative suction in a great number of cases in which we found nausea or vomiting after operation. It keeps the stomach empty, renders these patients comfortable, and serves to supply fluids by mouth during the time the patients are nauseated and are vomiting. Poissonnier in France recognized this principle in treating perforated ulcers of the stomach in 1906. This brings me to the second group of cases in which we have used it: those cases in the abdomen in which there has been some question as to the final diagnosis. My belief is that this method is fundamental and should be understood by every practitioner of medicine, because it will lead to a more accurate and more careful diagnosis. Most of the mortality and morbidity is probably due to an inadequate examination, understanding and evaluation of patients before they come to operation. This method will give one time to evaluate the patient properly and in that way one will reduce the mortality rate markedly. I believe that as a result of this method the old teaching that an obstruction means an emergency operation is antiquated. In the service with which I am connected an obstruction in the abdomen is no longer considered an emergency operation. By means of this decompression we are able to evaluate patients, to find out what their nonprotein nitrogen is, what their chlorides are, what their kidney function is, and then we have a pretty good idea as to what the patient will stand. We use the method not only in the evaluation of patients before operation but also postoperatively. The facts and principles that were presented in this paper are so fundamental that every practicing physician should understand them. They can be used in the home, they can be used in the hospital. If they are properly used in the home it will be possible to carry moribund patients along, transfer them to the hospital, properly evaluate their condition and give the proper treatment.

DR. WILLARD BARTLETT, JR., St. Louis: I have been using this method of decompression of the intestine by continuous

positive suction from the stomach since 1930, with the greatest satisfaction. It is my sincere belief that in the absence of necrosis of the bowel wall, the patient who is treated in this manner together with proper replacement of water, salt and minerals will have a very hard time dying. I am satisfied that he will not get worse under observation but will get into a far better condition to stand a radical corrective operation if such becomes necessary. By keeping track of the intake of fluid by mouth and of the return of fluid from the nasal catheter under suction, one can tell exactly what the physiologic status of the obstructed intestine is as it varies from time to time with progress under treatment. One can tell in terms of cubic centimeters per hour at what rate ingested fluids disappearing from the stomach are returning from the intestine into the stomach. I have taken the pylorus as the landmark and embodied it in this term of polyoric balance in the anatomic, not in the physiologic sense of the word. When these patients are first seen, they are in a state of negative pyloric balance; that is, they are refilling their stomachs from the obstructed intestine. That negative balance diminishes under treatment until a zero point is reached, and then, as they recover, a positive balance develops. I will differ with the authors in this one point, that in the patients with obstructing lesions in the left half of the colon the ileocecal valve is usually incompetent and suction treatment at least in certain of them may be successfully and safely used.

DR. O. H. WANGENSTEEN, Minneapolis: Only after this method of treating acute mechanical obstruction has been tried in the hands of many practitioners under varying circumstances will its limitations and possibilities become well defined. The method has certain limitations, as the enthusiast will soon discover. When employed judiciously it will obviate the necessity for many operations and when combined with timely surgery, in instances in which the method as a sole therapeutic agent is inadequate in dealing with the obstruction, its employment, I believe, will lead to definite lowering of mortality. It may appear difficult to comprehend the logic of its use in many instances of adhesive obstruction when one contemplates the nature of the interference of the band to the continuity of the intestine. When one recalls, however, that simple enterostomy in similar instances often serves the purpose adequately without a direct attack on the obstructing mechanism itself, one may better appreciate how nasal catheter suction siphonage may be successful in effecting decompression of the blocked bowel. It may not be amiss to remember that it is often one's own fixed ideas that constitute the most difficult hurdles. Two factors that contribute largely to the unwarranted mortality of acute intestinal obstruction are late diagnosis and ill chosen surgical procedure. It is difficult to adjudicate or appraise accurately the sins of omission or commission, but I have the firm conviction that a large number of neglected cases of bowel obstruction may be salvaged by critically selected and well executed surgical procedures. In the absence of a strangulation obstruction, the operation of least magnitude is the safest and wisest conduct for the patient. In late simple obstruction, the performance of an aseptic enterostomy as described here by Drs. Orr and Gatch holds out the greatest hope for the patient. When strangulation is present, the viability of the bowel must be determined; no matter how ill the patient, devitalized intestine must be excised. Exteriorization with secondary anastomosis in such instances in the usual case is safer than primary resection.

Infantile Paralysis. — The first outbreak in the United States was described by Caverly, in 1894, in Vermont, while Wickham, of Sweden, in 1905, first described the mild, nonparalytic type of case and recognized the slight infectiousness of the disease. In 1909, Landsteiner and Popper first successfully transmitted the disease to monkeys. During the succeeding years of intensive study of poliomyelitis, not a great deal of progress had been made in the prevention and treatment of the acute condition, but great advances have been recorded in the restoration of function of paralyzed muscles and much has been added to our knowledge of the extent of infection in the population and the probable methods of spread. — Harrison, W. T.: Poliomyelitis: How Is It Communicated? *Polio Chronicle* **3**:2 (Sept.) 1933.

THE PREHALLUX IN RELATION TO FLATFOOT

F. C. KIDNER, M.D.
DETROIT

In 1929 I [1] described an operation for the correction of certain cases of intractable flatfoot by the removal of the prehallux or accessory scaphoid and transplantation of the posterior tibial tendon. In that article the

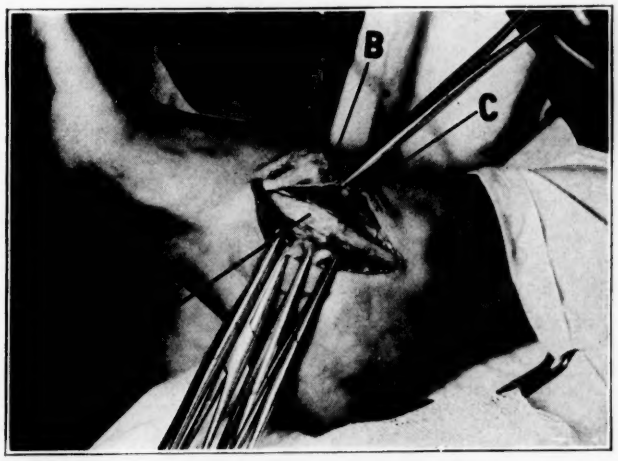

Fig. 1.—*A*, posterior tibial tendon passing over inner end of prehallux to insert in cuneiform; *B*, upper flap dissected off superior surface of the scaphoid; *C*, superior surface of scaphoid.

literature was reviewed and a bibliography given. It was stated that the prehallux is a common and frequently unrecognized anomaly which, by changes in leverage, interferes with the normal mechanics of the action of the posterior tibial muscle and thus produces weakness of the longitudinal arch and flatfoot of a type highly resistant to the usual conservative methods of treatment.

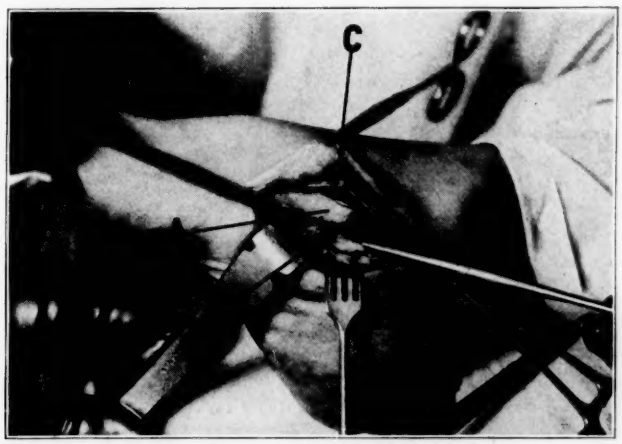

Fig. 2.—*A* and *C* as in figure 1; *B*, lower flap dissected off inferior surface of scaphoid and astragalus.

It was also stated that in the presence of the prehallux, whether as a separate bone or as a prolongation inward of the scaphoid, there is an abnormal insertion of the tibialis posticus tendon. Instead of passing under the inner end of the scaphoid to insert in the lower sur-

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From the Orthopedic Clinic of the Children's Hospital of Michigan.
Read before the Section on Orthopedic Surgery at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

1. Kidner, F. C.: J. Bone & Joint Surg. **11**: 831 (Oct.) 1929.

face of the two internal cuneiforms and bases of the second and third metatarsals, the tendon is displaced inward and upward to pass across the inner tip of the scaphoid, to which it is attached firmly before finally inserting into the medial surface of the internal cuneiform. This change in course and insertion results in

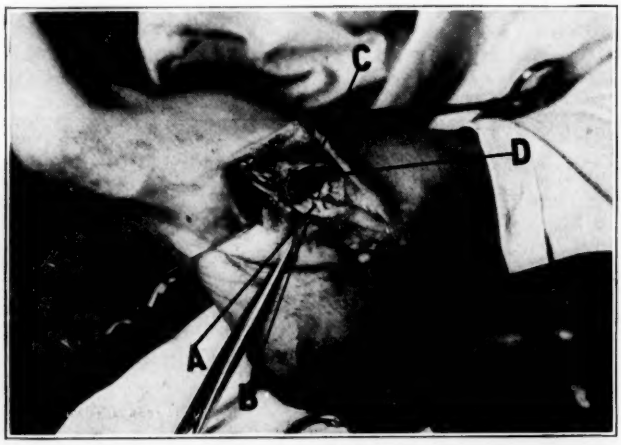

Fig. 3.—*A*, tendon transplanted downward and outward between lower flap (*B*) and scaphoid. Deep stitch in place. *D*, osteotomized inner surface of scaphoid; *B*, lower flap; *C*, upper flap.

the loss of the tendon's normal suspensory action and transforms it into an adductor of the forefoot instead of an elevator of the tarsus and longitudinal arch. In other words, the proper function of the tibialis posticus is that of an inward rotator of the foot around the longitudinal axis, passing through the middle of the head of the astragalus. This function is entirely lost in its abnormal attachment.

It was also shown that the inward projection of the scaphoid, whether united or not, interferes in the full inversion of the foot, either by pinching of the internal lateral ligament of the ankle or by actual impingement on the internal malleolus, which, in time, tends to increase valgus, through reflex overactivity of the abductors, in their effort to prevent pain.

Fig. 4.—Two flaps sutured over bare bone end and tendon.

Since the publication of that paper, my associates and I have continued to study this problem and to employ and improve the operation with increasing success. Certain new points have developed. Most important of these is the fact that many cases of flatfoot in which the prehallux is absent show the same abnormal course of the posterior tibial tendon that is associated with its presence. The tendon passes across the inner end of the scaphoid instead of under it and thus loses its suspensory function and its mechanical advantage as a support to the longitudinal arch. The second point is the fact that, in the presence of the prehallux, the outward excursion of the scaphoid on the head of the astragalus is increased so that the motion of the astragaloscaphoid joint is abnormally great, producing what is, in effect, an outward subluxation of the whole forefoot or an inward subluxation of the anterior end of the astragalus. This leads to a considerable increase of ligament strain with marked pain and foot weakness.

The continued study of this condition has convinced us of its importance in the etiology of a large class of cases of what may well be considered congenital flatfoot. This conviction has led us to employ the operation for its correction as a routine in all cases, whether in children or adults, which present a prehallux, either free or united, or which present a posterior tibial tendon whose attachment is transposed inward and upward.

OPERATION

The operation has been somewhat modified in order to secure a dependable fixation of the posterior tibial tendon in its new bed. It now consists of the following essential steps:

A generous incision, with slight downward or upward convexity, is made through the skin and fascia over the course of

Fig. 5 (case 1).—*A*, before operation; *B*, after operation.

the posterior tibial tendon from a point just in front of the internal malleolus nearly to the base of the first metatarsal. The tendon is dissected clear, through the whole length of the incision, care being taken to preserve its attachment to the prehallux and to the cuneiform. From the superior and inferior borders of the tendon two fascial ligamentous and periosteal flaps are dissected outward from the superior and inferior surfaces of the scaphoid and anterior astragalus. The dissection of these flaps, subperiosteally, leaves the upper and lower surfaces of the inner third of the scaphoid exposed, the tibial tendon still being attached to its inner tip. The inferior flap is carried outward for at least an inch. The tendon is then freed from its scaphoid attachment with a thin osteotome, in such a way that the medial fibers are detached from the medial surface of the cuneiform; but the inferior fibers are left attached. This leaves the distal insertion of the tendon underneath the long arch and assures a straight line of pull when the tendon is transposed.

It is then possible to transpose the whole tendon outward and downward to the lower surface of the scaphoid. Usually the contour of the lower surface of the scaphoid is such that a natural groove exists for the reception of the tendon. If not, such a groove is cut. The inner end of the scaphoid and the prehallux is then removed so that the remaining bone is flush with the astragalus and cuneiform. Bone wax is forced into the raw surface of the scaphoid to prevent new bone formation, an unpleasant complication that has occurred. If the inferior periosteal ligamentous flap is strong and firm, two number 2 chromic gut stitches are passed, by means of a very short, sharply curved cutting needle, from below upward, at a

point as far outward as can be reached, through the flap, through the tendon, and then down again through the flap, to be tied in the sole of the foot. These stitches anchor the tendon three-fourths inch outward from its original position and directly beneath the scaphoid.

The upper and lower flaps are then sutured together with chromic gut, so that the scaphoid is covered and the tendon firmly buried in its new bed. If the inferior flap is weak as a result of the chronic foot strain, the tendon is fastened in its new bed by means of chromic stitches passed through two holes drilled through the middle of the scaphoid. In anchoring the tendon, care is taken to see that it is under tension and that the foot is in moderate cavus and supination. The skin wound is then closed and the foot put up in plaster in the overcorrected position for six weeks. This is sufficient time to allow the posterior tibial muscle to take up the slack in its tendon and to allow complete fixation of the tendon in its new bed. Corrective shoes are then fitted and physical therapy and muscle education carried out for another eight weeks. If the case has been a severe one, outside upright braces with inside T straps are worn during this period.

Fig. 6 (case 2).—Before operation, showing prehallux and displaced tendon.

COMMENT

The operation has been uniformly successful in three ways. First, by transforming a perfectly flat foot into one with a good longitudinal arch. Second, by relieving symptoms that were due to foot strain. Third, by removing the unsightly prominence of the inner end of the scaphoid, which is subject to trauma and frequently painful. Power of voluntary full supination always follows the operation.

In 1928, I. Zadek published a paper in which he recognized the fact that the attachment of the posterior tibial tendon was often abnormal in the presence of prehallux, but he thought that the tendon ended at its attachment to the inner end of the scaphoid. Actually, the attachment to the tip of the scaphoid is in the course of the tendon which continues on to insert finally in the inner and inferior surfaces of the internal cuneiform and base of the first metatarsal and into the ligaments of the metatarsocuneiform joint. The considerable number of operations we have performed for this condition have given us an opportunity to study the anatomy of the posterior tibial tendon with great care. The textbooks state that the normal course of the tendon includes fibers attached to the inferior surface of the scaphoid but that the main attachment is a fanlike arrangement of fibers spreading over the inferior surfaces of internal cuneiforms and reaching forward to the bases of the second and third metatarsals. The textbooks also state that there is some attachment to the sustentaculum tali. In our operations we have seen all possible arrangements of the insertion from the textbook type to the completely transposed tendon just described. In a frequent variation, the tendon splits three-fourths inch posterior to the scaphoid, one branch inserting into the lower surface of the scaphoid and the other into its inner end.

Speculation as to the cause of the transposition of the tendon is interesting. Evidently the presence of the prehallux does not explain it completely, because it occurs in cases of flatfoot which show no prehallux. There is an interesting analogy between this anomaly and that of the anterior tibial tendon mentioned by Peabody.[2]

The mechanical disadvantage under which the tendon must work in its abnormal position is often well demonstrated at operation. When the foot is completely supinated and the forefoot adducted, the tendon will seem to wrinkle or fold up longitudinally so that it is pinched between the malleolus and the scaphoid, thus explaining the tenderness and some of the pain.

1337 David Whitney Building.

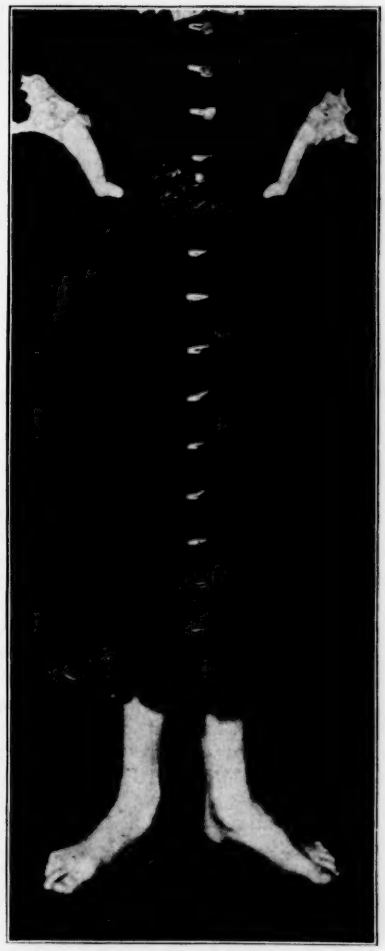

Fig. 7 (case 2).—After operation, showing good arch.

ABSTRACT OF DISCUSSION

DR. CHARLES W. PEABODY, Detroit: During the last five years I was responsible for the work in an independent orthopedic clinic that sees quite a large number of postural defects. Thanks to a very competent physical therapy staff, this clinic has been getting prompt and permanent results by the usual program of support and postural reeducation, but still there were a certain number that failed to respond. When about four years ago Dr. Kidner called my attention to the anatomic variations associated with what he calls "prehallux," I found that this anomaly was, roentgenologically at least, demonstrable in most of these children that did not respond. Ever since an early acquaintance with Thomas Dwight's monograph on the supernumerary bones of the foot, I have been conscious of the existence of his "tibiale externum" or "accessory scaphoid" and had frequently been bothered with it in attempting a com-

2. Peabody, C. W., and Muro, Felipe: J. Bone & Joint Surg. **15**: 171 (Jan.) 1933.

fortable fit of the Whitman weak foot brace. I also had noted Sever's article some fifteen years ago on successful relief of symptoms by removal of these bones. But I had never heard of the theory of mechanical interference with the normal supinator function of the tibialis posticus muscle and tendon until Dr. Kidner worked it out, and so far as I know, his is an original contribution in this respect. Since 1929 I have had the opportunity of operating on twenty-four patients with this condition. In all I have encountered along with the bony abnormality the same deviation in the posterior tibial tendon, and with almost the same technic have seen the same elimination of symptoms, objective and subjective. It has seemed to me that the mechanics of muscular control of the human foot places a major burden on the invertors or supinators with the tibialis posticus bearing the brunt of this, and I am convinced that Dr. Kidner is right in his proposition that the displacement of the insertion of this tendon, which has uniformly been seen to accompany the scaphoid anomaly in all the operative cases, tremendously impairs its effectiveness. The definitely localized pain of which many of these children complain, and the frequent localized tenderness and swelling, are due to the abnormal strain at this point in the attempt at normal function. It may sometimes be due to the chafing of the enlargement against the shoe, with a sort of bursitis over it, or possibly also to a traumatic epiphysitis or apophysitis at this point, as at the heel and at the tibial tubercle. The prehallux cases in my series presented both tenderness by palpation and subjective symptoms. The final check up showed absence of pronation in all, as contrasted with marked pronation originally. It is my impression that these anatomically had a good arch, the pronation being the relatively greater defect; that is, a relaxed foot rather than a structural flatfoot, and on postoperative check up all showed a normal arch. In fact, four years ago the clinic registered 293 cases of defective foot posture. Of that number I made a diagnosis of prehallux in thirty cases, or about 10 per cent. Objective symptoms (defects of posture) or pain were present in 24. Operations were carried out in 21.

DR. EDWIN W. RYERSON, Chicago: I have operated on a number of patients with accessory scaphoid without in any way realizing the importance of the suspensory power of the posterior tibial tendon and that it was displaced in its insertion. The significance of this should be recognized by all orthopedic surgeons, and the paper is a distinct contribution. I feel that, in two of the cases in which I simply removed the accessory scaphoid and diminished the internal projection of the scaphoid without transplanting the posterior tibial tendon and binding it to the outer side, the unfavorable results were probably due to the point brought out by Dr. Kidner. It occurs to me that in some of the more marked cases of lateral deviation of the foot it might be wise to combine with Dr. Kidner's operation the arthrodesis of the joint between the internal cuneiform and the first metatarsal bone, afterward placing the first metatarsal at an angle downward to increase the height of the arch. It is possible that this combination would produce a little higher arch, although the height of the arch has no real relation to the capacity of the foot for work. Nevertheless, in one or two of the pictures that have been shown it struck me that the foot would be a little bit stronger if the arch were a little higher, and the combination of Hoke's operation with Kidner's operation might mean a slight improvement.

DR. FREDERICK C. KIDNER, Detroit: I want to thank Dr. Peabody and Dr. Ryerson for their discussions. Dr. Peabody spoke of the duration of after-treatment. I said six weeks in plaster because most of my cases are in a crowded free clinic in which we haven't enough physical therapists to give the necessary time and accurate care that should follow the early removal of plaster. I think that Dr. Peabody is right, that three weeks of complete fixation is enough if one has the properly trained physical therapists to take care of the cases in the early stages. Dr. Ryerson spoke of arthrodesis. In one or two cases I have done an arthrodesis of the scapho-astragalar joint, and in one or two others of the cuneiform metatarsal joint, but those were cases in which the arch had been fixed in rigid flatfoot by long use. I felt that the tendon itself would not be strong enough to lift such fixed flatfoot. In certain cases it is wise to do an arthrodesis in conjunction with transplantation of the tendon.

SUBPERIOSTEAL RESECTION OF THE TIBIAL SHAFT IN OSTEOMYELITIS

D. M. BOSWORTH, M.D.
NEW YORK

One of the most startling statements that I can remember during my undergraduate training concerned the regeneration of a complete new bone shaft in the young, following subperiosteal excision. As I remember it, the source of the experimental and practical work on which this statement was made was not given. Nevertheless, the fact that nature could replace such a complicated and necessary structure of such gross size seemed unbelievable. The fact, however, was accepted by me and, like many such, was not again thought of until September, 1928. At that time the first case herein reported was seen. Previous to this time, I had found it a frequent medical rumor that such regeneration could occur, but it was not until the literature was inspected following the completion of the first case that the sources of theory and practical application were discovered.

The work of three men, Ollier in 1857, Nichols in 1904, and Phemister in 1915, stood out as major constellations in a rather small firmament. The literature in regard to this subject is very limited if one excludes all reports of tibial defects not due to osteomyelitis and those not consisting of practically a complete diaphysis. Only six men have reported having removed a complete tibial shaft with the expectation of periosteal regeneration, and of these only four gave the end-results. Haas and Beck mentioned excision of tibial shafts as having been done with the possibility of securing regeneration, but they did not report any specific end-results. Ryerson, in a discussion, stated that he had three cases of successful regeneration of the entire tibial shaft and one failure. Clopton reported four successful cases and two partial failures of regeneration.

Nichols wrote a lengthy monograph applying Ollier's principles of bone regeneration in cases of removal of the tibial shaft for osteomyelitis. He reported in detail three cases of complete removal of the tibial diaphysis, with good functional results obtained within from a few months to four years after operation. It is noteworthy that he delayed removal of the tibial shaft for the formation of an involucrum, and the inference is that he left it in place. No immediate postoperative roentgenograms were shown, so that one cannot be certain whether or not he left the involucrum as a partial supporting structure. He stated, however, that when collapsing the periosteal tube there was a crackling sensation. This again would lead one to infer that some or all of the involucrum was left inside. He made an important remark regarding operative removal; viz., that whenever possible one should taper the stump of diaphysis remaining attached to the epiphysis at either extremity of the periosteal tube, so that no dead space is left. (This was done in all of my cases, necessitating sequestrectomy from the distal portion of the diaphysis in two of them, after almost complete healing of the rest of the wound and beginning regeneration of the tibial shaft.) He mentioned two cases prior to his own in which tibial regeneration occurred; one was done by Cheever in 1870 and the second by H. W.

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Cushing in 1899. Both were in Boston and were locally reported. The extent of removal and speed of regeneration were not given, but the final results were reported as complete successes. He stated that the best time for such an operation is eight weeks after infection; but, as will be seen from my subsequent case reports, regeneration can take place at any period. He likewise makes sterilization of the exposed periosteum an important factor. (Sterilization, however, in a widely infected periosteal tube must certainly be impossible and was not attempted in any of my cases. All the tubes were formed without disinfection, except once when the infection was so virulent that the periosteal tube was packed widely open.) His end-results showed good function, with full weight bearing, through an irregularly shaped shaft, which eventually developed a marrow cavity. He reported no failures, or partial failures, such as my last three cases may prove to be. Just as successful and safe lengthening of the tibial shaft was first done by LeRoy Abbott, and the principles evolved by him have not been changed, so Nichol's article is the basis on which all subsequent work on regeneration of the tibial shaft has been carried out.

Animal experimentation with subsequent human operation, based on Ollier's principles and Nichol's practical results, were reported by Phemister in 1915. He went on from experimental and theoretical conclusions to remove a tibial shaft in two cases. In a girl, aged 3 years, he secured a perfect result, with no shortening, two and three-fourths years after operation. In his second case, that of a man, aged 45, he obtained practically no regeneration, and though the case was reconstructed later it must be classed as a failure from the standpoint of the present article.

Haas reported no cases but stated that excision of the tibial shaft was followed by restoration of the bone in the majority of cases and advised leaving the wound wide open. I feel that one must be warned against such a procedure. Removal of a complete shaft and drainage only at the ends of the periosteal tube give sufficient margin of safety in the face of any osteomyelitic infection of the tibia. With the periosteal

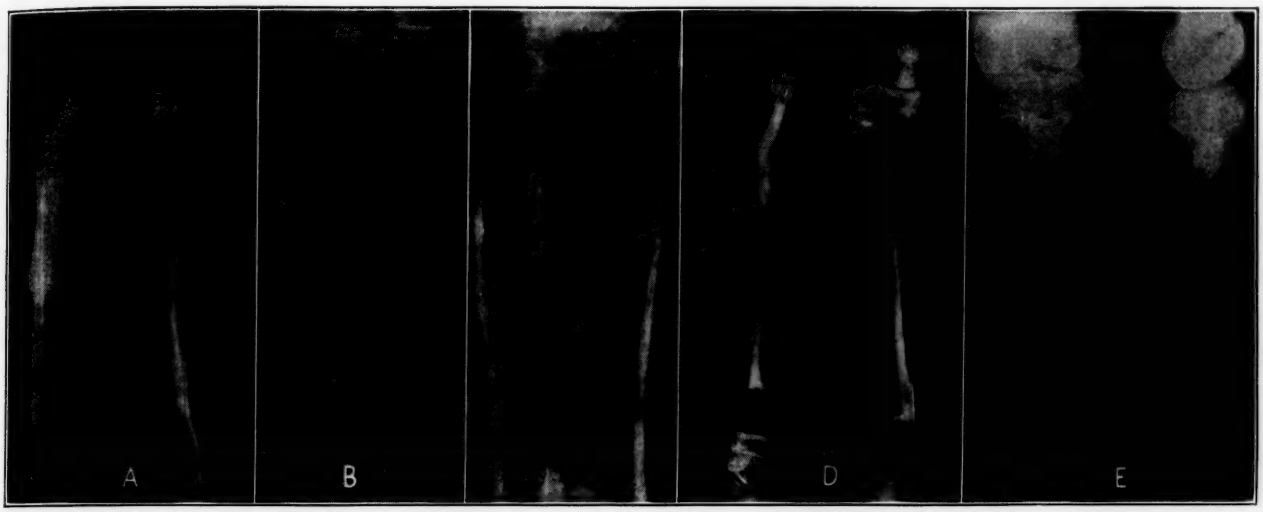

Fig. 1 (K. C.).—*A*, preostectomy condition of the tibia riddled with sequestrums. The epiphyseal plate is involved. *B*, complete excision of the tibia. *C*, faint line of periosteal regeneration, one month after operation. This is the slight shadow just to the right of the fibula. *D*, new tibial shaft four years after operation. *E*, increased size of the tibial shaft following excision of adherent scar.

Summary of Histories of Six Cases

Patient	G. B.	G. C.	N. H.	I. N.	J. S.	F. W.
Age	16 years	8 years	11 years	6 years	7 years	9 years
Sex	Male	Male	Male	Male	Female	Male
Regeneration	Part	Full	Part	Full	Full	Part
Organism	Staph.	Staph.	Hem. staph. aureus	Staph.	Staph.	Staph.
Duration of preostectomy	7 months	15 months	2½ months	10 months	1 month	6 months
Involucrum present	Slight	None	Marked	Slight	Slight	Moderate
General health	Anemic, chronic sepsis	Anemic, chronic sepsis	Septic cachectic amyloid	Very toxic, amyloid	Toxic	Anemic cachectic amyloid emaciated
Tibia removed	Right	Left	Left	Left	Right	Left
Other foci of infection present preoperatively	Right femur; left tibia	Right radius; left thigh; left arm; right elbow	Right leg; left ankle; left talus	Left elbow; right femur; both knees	Right ankle; right talus	7th left rib; 8th right rib; left femur; left hip; right tibia; great toes
Previous operations	Three	Seven +	Three	Eight	Three	Six +
Subsequent operations for infection	Sequestrectomy of distal stump of old diaphysis	None	Sequestrectomy of distal stump of old diaphysis	None	None	Paronychia of both great toes
Effect of ostectomy on other foci	Healed all	Healed all	Healed all	Healed all	Healed all	No effect
Proximal epiphysis involved	No	Yes	Yes	Yes	No	No
Distal epiphysis involved	Yes	Yes	Yes	Yes	Yes	Yes
New marrow cavity	.....	Yes	.....	Yes	Yes	
Loss of length	.....	1¼ inches	.....	¼ inch	⅝ inch	
Full weight bearing	.....	16 months	.....	9 months	15½ months	
Fractures new tibia	.....	Twice	.....	No	No	
Adherent scar excised	.....	Yes	.....	No	No	

tube open there is difficulty in covering the new tibial shaft, which has begun to regenerate on the external surface of the leg.

A few writers have advised leaving a portion of the shaft in situ to splint the periosteal tube. This procedure, however, really represents the method popularized by Winnett Orr and need not be discussed in this article.

Since there are many reports of repairs of defects in the tibial shaft by the use of the fibula, a portion of the opposite tibia or the femur, one must conclude that excision of the tibial shaft is frequently followed by lack of regeneration. The imposing list of such cases should be a warning against resection of the tibial shaft whenever it can be avoided. I did not consider resection of the tibial shaft justifiable in my cases unless conservative treatment had been well carried out and had failed, leaving the patient either profoundly toxic and overcome by his infection or with definite signs of advancing amyloid degeneration. It is certainly not a procedure to be undertaken lightly, but still it is preferable to amputation of a limb or an eventual death or disability following amyloid disease.

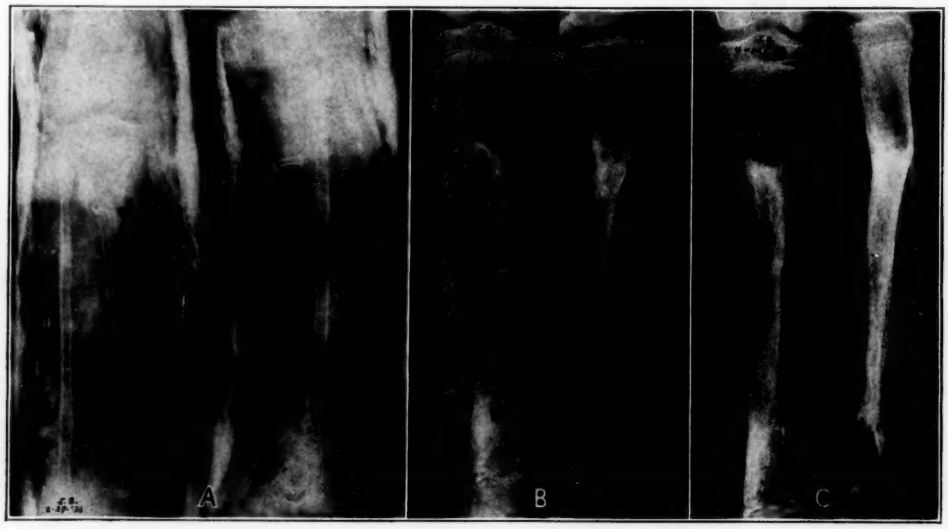

Fig. 2 (J. S.).—*A*, four days after ostectomy, showing the area of widely excised shaft with drainage tubes and plaster splint in place; *B*, six months after operation, with practically completely reformed tibial shaft; *C*, fourteen months after operation, with completely reformed tibial shaft.

Six case histories are summarized in the accompanying table in which a subperiosteal resection of the tibial shaft and involucrum was done. Three of these regenerated complete new diaphyses, and three to date have failed to do so completely. From a review of the literature and a tabulation of my own end-results, it would seem that the age of the patient was the most important factor in the process of regeneration. I would never expect to obtain a new weight-bearing unit in an individual past adolescence, and I believe that even at this period it is doubtful whether one can rely on sufficient regeneration. I would feel that before the age of 9 years in every case regeneration will take place if the whole periosteal tube is left intact.

I do not believe that leaving the involucrum is necessary to regeneration, and the accompanying roentgenograms show that such involucrum was not retained. Perhaps it would have been better to leave the involucrum in situ to speed up the process of regeneration and to increase the size of the newly regenerated shaft. There is always the danger of leaving sequestrums behind in case the involucrum is allowed to remain. In the cases in which full regeneration of new tibial shafts has resulted, there was either no involucrum or very slight involucrum present at the time of operation, whereas two of the cases that have not to date been successful showed marked involucrum.

As will be seen by the table, the duration of the osteomyelitic process has had no influence on the subsequent regeneration of a new tibial shaft. All of my cases gave cultures of staphylococci, though the subdivisional type is unobtainable. One case was reported as hemolytic Staphylococcus aureus.

The general health was very poor in all cases, with definite amyloidosis apparent in three of them clinically. In every instance it was a question whether any process would save the child's life. In all, the general health has returned to normal at this time, though in one there has been no influence on healing of the secondary foci of infection. It is interesting to note that among these six cases of tibial infection there were present twenty-one other foci of infection, probably all metastatic in nature. It is of still greater interest to note that in only one case have these metastatic foci failed to heal promptly following the excision of the main focus, the tibial shaft. They have remained healed to the present time.

Operative procedures directed toward the osteomyelitis of the tibias and secondary foci, previous to ostectomies, numbered more than thirty, better than an average of five operations to each case.

Subsequent operative procedures, necessitated by infection, have been three in number. They consisted of a sequestrectomy from the distal stump of the diaphysis in two cases and incision for paronychia of the great toes in a third case. None of the three cases in which complete new weight-bearing tibial diaphyses were regenerated have required a secondary operation for infection or for the securing of continuity of the new tibial shaft. One of the patients fractured his new tibia twenty-three months after ostectomy and developed a fibrous nonunion requiring a sliding graft. At the time the sliding graft was implanted, new medullary bone structure was encountered within the regenerated tibial diaphysis.

Permanent shortening of the leg is a matter of extreme importance and has occurred to some extent in every case. Among the three cases of complete new tibial shafts, the loss in length amounts to one-fourth inch in one case, five-eighths inch in the second and 1¼ inches in the third. This shortening seems to occur immediately following operation and also through loss of growth due to injury of the epiphyseal plate by the infectious process. Two of the patients with complete regeneration suffered injury to both the proximal and the distal epiphyseal plates preoperatively, by the infectious process, and the third patient had an involvement of only the distal epiphyseal plate.

New marrow cavities have regenerated through all three of the newly formed tibial diaphyses. Fractures of the new shaft occurred in one case only. In this case, which fractured twice, union was spontaneous in one instance and a sliding graft was necessary in the other. In one case an adherent scar required excision, and following excision the tibial shaft increased very rapidly in lateral diameter. In another instance, owing to the acute illness of the child, the periosteal tube was packed wide open. The result was a rapid formation of a new flat tibial shaft on the external surface of the leg. This required a plastic operation to the soft tissue and skin through a grossly infected area. There was a highly successful immediate outcome, but an unquestionable retardation of the growth of the new diaphysis. To date, a complete shaft has not formed.

When regeneration is going to occur, as seen in these cases, it occurs fairly rapidly. Within a month, a continuous new faint line of calcium is seen lying within the periosteal tube. From this point on, the development of the new tibia proceeds in speed with direct relation to the youth of the child. One boy, aged

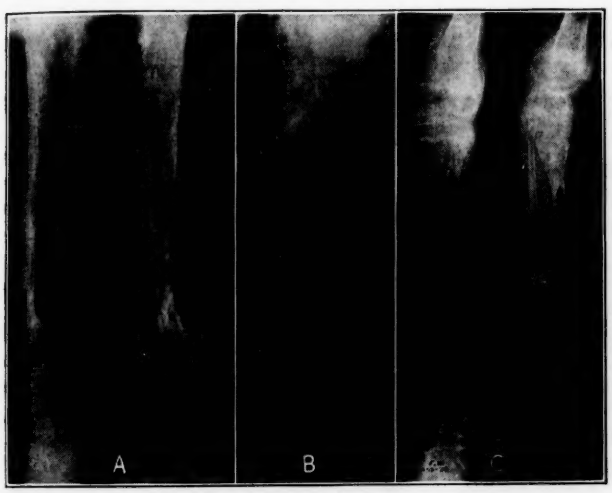

Fig. 3 (F. W.).—*A*, old sclerotic deformed remnant of original tibial shaft; *B*, fibula very lightly shown but absence of tibia definite; *C*, five months after ostectomy, showing grossly incomplete regeneration at that time.

6 years, was walking without support on a completely regenerated tibia within nine months. A second child, aged 7 years, had a completely regenerated new tibia within a year, though weight bearing was not allowed until fifteen months after operation. A third boy, aged 8 years, had a new tibia, much smaller in size than in the preceding two cases, with weight bearing in sixteen months. The remaining three patients were 9, 11 and 16 years of age. Incomplete new shafts were reformed within about five months, but in these cases the new bone formation subsequently proceeded no further. One of the latter (F. W.) was too recently operated on to determine the outcome.

From these patients whose ages were 6, 7, 8, 9, 11 and 16 years, one must judge that to expect complete regeneration of a new tibial shaft beyond the age of 8 is to invite failure. I do not mean by this that one should never remove a tibial shaft beyond that age. Frequently one has no other choice except that of amputation, or prolonged sepsis with its attendant amyloid changes. Granting that a new tibial shaft is not developed, as occasionally happens, the literature is full of instances in which the defect has been subsequently corrected by osteoplastic operations.

The operative technic is very simple. It consists of the resection of the tibial diaphysis subperiosteally, leaving pointed wedges attached to the proximal and distal epiphyseal lines. This should be done even if the wedges left are grossly infected, so as not to disturb the epiphyseal plates more than need be. In most instances removal of the grossly infected diaphysis will allow the patient's resistance to overcome all other infectious loci present, including the remaining diaphyseal stumps. If the removal of sequestrums from these stumps at a later date is necessary, it is a simple matter. The periosteal tube should be completely closed along the line of incision by sutures separate from those used to close the skin and subcutaneous tissues. This will prevent an adherent scar. Drainage, which is necessary, will take place at each end of the operative wound where the ends of the diaphysis have been left. The Orr method of postoperative care, which of course includes a plaster boot from groin to toes, is the most satisfactory.

The reports of cases would be so voluminous that they have been omitted. The essential facts have been included in the table.

CONCLUSIONS

1. Six cases are reported in which the tibial shafts were removed subperiosteally, including any involucrum, for osteomyelitis with extreme sepsis and multiple foci.

2. Complete regeneration of a new tibial diaphysis containing a new medullary cavity has been shown to have occurred in three instances.

3. The procedure is an extremely radical one, to be used only when the alternative is a conceivable amputation or death of the patient, from chronic sepsis.

4. Shortening may always be expected. After the age of 8 years failure of regeneration, in whole or in part, will probably necessitate later osteoplastic procedures.

5. All these results and conclusions must not be accepted as final, since, obviously, completion of this study cannot be carried out for another ten years.

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ABSTRACT OF DISCUSSION

DR. D. B. PHEMISTER, Chicago: I agree with what Dr. Bosworth had to say about subperiosteal resection except with reference to the time and the extent to which it is carried out. The ideal treatment of osteomyelitis would be subperiosteal resection if regeneration of the shaft always followed. That would lessen the mortality, hasten the period of repair, and lessen the frequency with which the disease recurs. Unfortunately, because of frequent failure of regeneration of the shaft, great restrictions have to be placed on the use of the procedure. I think it should be used in those locations in which it makes no difference whether regeneration of the shaft takes place or not. For instance, all osteomyelitis of the rib and osteomyelitis of the fibula should be treated by subperiosteal resection because it doesn't matter very much whether there is regeneration or not. It should also be used in a limited number of cases of severe infection when it looks as if the life of the patient is threatened. Regarding the time, I don't think that it should be performed on the long bones except between the second and sixth weeks, during which the soft involucrum can be left behind. That is, it should be performed after an involucrum has started out but before it is densely ossified. If one waits until it is densely ossified and then excises the shaft along with the involucrum, one will get a failure of regeneration in such a high percentage of the cases as to make the procedure unjustified.

DR. J. E. M. THOMSON, Lincoln, Neb.: Although this procedure may be indicated in certain instances, it has a very limited place in the treatment of osteomyelitis and, if it is used promiscuously, dire results will follow. I made an analysis of sixty-one cases of osteomyelitis of the tibia that have come to a private clinic (I am speaking of the work of Drs. Orr and Thomson in the clinic). In this series I found that only one ostectomy had been performed. There were five patients who came within the age limits in which, according to Dr. Bosworth, this operation would be appropriate. Two of these patients were 6 years of age, two were 7 and one was 8. Three were weak and had chronic sepsis. Two showed amyloidosis and emaciation. In one of these cases both tibias were involved. Four of these patients had previous operations. Involucrum was present in three, and the complete shaft was involved in five. Four of the operations consisted of a complete opening of the length of the shaft and adequate drainage. In one there was wide opening of the lower third: ostectomy was performed in one case. All these were treated by the Orr method of petrolatum pack and cast. As to the results, one patient was operated on again ten years later; healing has taken place in four cases, and in the one case in which the shaft was removed in November, 1930, drainage continued for six months. With weight bearing, complete shaft regeneration took place thirteen and one-half months after the operation. In considering these figures, one should keep in mind the fact that one of these patients had osteomyelitis of both tibias. I believe from this study that thorough drainage and adequate after-treatment obviate the necessity of doing an ostectomy. I had the same experience with ostectomy that Dr. Bosworth had, in that the shaft was entirely loosened by the disease process.

DR. DAVID M. BOSWORTH, New York: These cases were extremely had ones. I would not remove a tibial shaft unless it was a matter of doing that or amputating the leg. I think that every one who has seen cases of failure of regeneration of the tibial shaft will agree in this.

EXPERIMENTS WITH ANESTHETICS

IV. LESIONS PRODUCED IN THE SPINAL CORD OF DOGS BY A DOSE OF PROCAINE HYDROCHLORIDE SUFFICIENT TO CAUSE PERMANENT AND FATAL PARALYSIS

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We wished, in our study, to find the dose of anesthetic agent required, when given subdurally, to produce permanent paralysis of the hind legs and permanent changes in the spinal cord. Since procaine hydrochloride is the safest and most universally employed drug for spinal anesthesia, our experiments were confined to its use. The data here reported deal chiefly with results following subdural injection of huge doses of procaine in the dog. It was found necessary to give very large doses of procaine, in definite concentration, to produce permanent ill effects, as judged by the behavior of the dog and the microscopic examination of the spinal cord.

Davis, Haven, Givens and Emmett [1] have reported that a dose of procaine suitable for man, when given subdurally to a dog, has resulted in changes in the membranes of the spinal cord and in the spinal cord itself; these changes, however, were not permanent.

EXPERIMENTS

In preparation for injection, the dogs, without previous medication, were placed on the Delhanty table, as modified by Essex and Lundy.[2] The injection, which was made between the fourth and fifth lumbar vertebrae, was carried out with technic that would ensure asepsis. Unless spinal fluid aspirated freely before and after the injection, the experiment was considered unsuccessful and was discontinued. When indicated, artificial respiration was given by means of a pulmonary ventilator. With two or three exceptions, dogs weighing between 18 and 30 Kg. were used. The entire spinal cord usually was removed after death. In selected cases, when death did not occur spontaneously, the dogs were killed from seven to ten days following the injection. Sections were made from the lumbar, thoracic and cervical regions of the spinal cords. Hematoxylin and eosin, and Weigert's myelin sheath stains were used. In order that the pathologist might be unbiased in his examinations, he was held in ignorance as to the previous treatment of the respective animals the spinal cords of which he was to study. Control experiments were carried out; these will be described later.

Results.—Twenty dogs (table 1) were given intradural doses of procaine, ranging from 500 to 2,500 mg. The concentration of the drug in the injected solution varied from 6.25 to 50 per cent. So far as permanent effects were concerned, the concentration of the drug was found to be quite as important as the total dose. For example, 5 cc. of a 25 or 50 per cent solution of procaine (1,250 and 2,500 mg., respectively) invariably caused changes in the spinal cord associated with permanent paralysis of the hind legs. However, 2.5 cc. of a 50 per cent solution (1,250 mg.) or 10 cc. of a 12.5 per cent solution (1,250 mg.) failed to produce permanent paralysis or changes in the spinal cord. We were interested to determine the concentrations of solutions of procaine, lower than 25 per cent, that would cause comparable effects. Five cubic centimeters of a 20 per cent solution of procaine (1,000 mg.) produced permanent effects that differed only in degree from those caused by 5 cc. of a 25 per cent solution. With the former concentration and quantity, degenerative changes extended only as far cephalad as the midthoracic region, whereas with the latter concentration and quantity, lesions extended as far cephalad as the cervical region of the spinal cord. Five cubic centimeters of a 17.5 per cent solution of procaine (876 mg.) did not result in permanent paralysis. It is evident, therefore, that the minimal concentration of procaine that will produce permanent paralysis in doses of 5 cc. lies between 17.5 and 20 per cent.

In an effort to come to some conclusion as to the relative concentration of the anesthetic at different levels within the spinal canal and also as to the degree of permeability, trypan blue and methylene blue (methylthionine chloride, U. S. P.) were added to the solution of the anesthetic. These dyes appeared to increase the toxicity of the solution, since both animals used in this connection quickly succumbed.

In the two instances in which 5 cc. of a 50 per cent solution of procaine was given, respiration was para-

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1. Davis, Loyal; Haven, Hale; Givens, J. H., and Emmett, John: Effects of Spinal Anesthetics on the Spinal Cord and Its Membranes: An Experimental Study, J. A. M. A. **97**: 1781-1785 (Dec. 12) 1931.

2. Essex, H. E., and Lundy, J. S.: A Technic That Facilitates Lumbar Puncture in the Dog, Proc. Soc. Exper. Biol. & Med. **29**: 751-753 (March) 1932.

lyzed for four and eight hours, respectively. In another experiment, respiration was paralyzed for two hours and forty-four minutes following injection of 10 cc. of a 12.5 per cent solution. This animal failed to exhibit any permanent effects. All three of these dogs were kept alive by artificial respiration [3] throughout the period of respiratory paralysis, at the end of which period respiration became spontaneous and adequate.

3. Lundy, J. S.: Adequate and Properly Controlled Artificial Respiration for Surgical Patients by Means of a New Pulmonary Ventilator, Proc. Staff Meet., Mayo Clin. **7**: 225-228 (April 13) 1932.

Since the changes in the spinal cord were peripheral in position and such as might be expected to follow increased intradural pressure, a series of control experiments (table 2) designed to increase the intradural pressure were performed. In two instances sufficient physiologic solution of sodium chloride was given to produce very definite symptoms. The salient features were extension of the head and neck, with rolling of the eyes; loss of sphincteric control with voiding of feces and urine, and momentary cessation of respiration. These animals recovered almost immediately and

TABLE 1.—*Summary of Protocols*

Dog	Weight, Kg.	Procaine Given: Dose, Mg.	Mg. per Kg.	Volume, Cc.	Per Cent	Respiration	Hind Legs	Pathologic Changes
1	18.2	2,500	132	5.0	50.0	Paralyzed for 4 hours	Permanently paralyzed	In the lumbar portion of the spinal cord there was a slight amount of hemorrhage in the peripheral portion (subpial zone), associated with superficial degeneration of the myelin sheaths; the thoracic portion of the spinal cord was similar to the lumbar except that there was less hemorrhage; degeneration of the myelin sheaths was less marked in the upper thoracic region and was absent from the cervical cord
2	26.5	2,500	94	5.0	50.0	Paralyzed in 7 minutes; remained so for 8 hours	Permanent paralysis; death in 3 days	
3	24.5	1,250	51	5.0	25.0	Paralyzed for 1 hour 24 minutes	Permanently paralyzed	In the lumbar portion of the spinal cord there was severe but superficial degeneration of the myelin beneath the pia mater, with only one small hemorrhage; in the thoracic portion there was only one small patch of degeneration beneath the pia mater; the spinal cord above this level was normal
4	22.0	1,250	56	5.0	25.0	Dog died (inadequate ventilation)		
5	28.0	1,250	44	5.0	25.0	Died suddenly	.....	There was no change in the myelin at the lumbar portion of the spinal cord, but there were a few small, petechial hemorrhages below the pia mater in one lateral column; there were no changes above the lumbar level
6	20.0	1,250	62	5.0	25.0	Paralyzed for 2 hours	Permanently paralyzed	
7	18.5	1,250*	77	5.0	25.0	Not adequate	Dog died of asphyxia	
8	25.5	1,000	31	5.0	20.0	Paralyzed for 2 hours	Dog died 3 days following injection	There was definite degeneration in the lumbar segments of the spinal cord as seen with the Weigert myelin sheath stain, but the hematoxylin and eosin stains indicated even more extensive degeneration; this degeneration was most marked on one side; above the lumbar region there was no degeneration of the myelin of the spinal cord
9	20.5	875	42	5.0	17.5	Paralyzed for 13 minutes	No permanent effects	There were no changes in the spinal cord at any level with any stain; there was some diminution in the myelin of some of the nerve roots, but this seemed to be due to excessive differentiation; there was no meningitis in this or any other specimen examined
10	30.0	1,250	41	2.5	50.0	Adequate throughout	No permanent effects	
11	24.0	1,250	52	2.5	50.0	Adequate throughout	No permanent effects	
12	28.2	1,250	44	2.5	50.0	Adequate throughout	No permanent effects	
13	15.8	1,250	79	2.5	50.0	Adequate throughout	No permanent effects	The spinal cord was entirely normal throughout
14	11.9	625	52	2.5	25.0	Adequate throughout	No permanent effects	
15	20.0	1,250	62	10.0	12.5	Adequate throughout	No permanent effects	
16	18.3	1,250	68	10.0	12.5	Paralyzed for 2 hours 40 minutes	No permanent effects	
17	23.8	625†	26	10.0	6.25	Complete and permanently paralyzed	Dog died	There were slight degenerative changes in the peripheral portion of the spinal cord immediately beneath the pia, but there were no hemorrhages; all other portions of the spinal cord and nerve roots were normal except such changes as may be accounted for by staining artefacts
18	14.5	500	24	2.0	25.0	Adequate throughout	No permanent effects	
19	30.0	600	20	6.0	10.0	Adequate throughout	No permanent effects	The spinal cord was entirely normal
20	33.0	750	22	5.0	15.0	Adequate throughout	No permanent effects	The lumbar portion of the spinal cord stained with Weigert myelin sheath stain was normal, but in the section stained with hematoxylin and eosin there was a conical, circumscribed region of degeneration, evidently the site of a needle puncture; all other portions of the spinal cord were normal

* With trypan blue, 0.5 per cent.
† With methylene blue, 5.0 per cent.

ran about the laboratory in an apparently normal manner.

The experiments just described indicated that pressure, per se, was not the explanation of the changes in the spinal cord; therefore the next control experiments were performed to determine whether the osmotic pressure of the fluid might be the significant factor. To that end a solution of dextrose isotonic with 25 per cent solution of procaine was used. This required a 40 per cent solution. Injection of 5 cc. of this solution did not have a significant temporary effect and was without any permanent effect on the two dogs in which it was used.

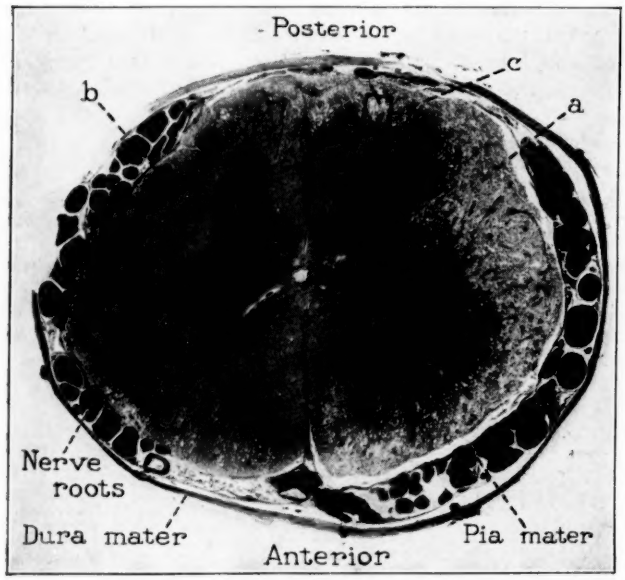

Fig. 1.—Cross section of the lumbar region of the spinal cord. The subpial zone on the right, *a*, shows marked destruction of the myelin sheaths; on the left, *b*, the myelin retains its normal staining qualities. Only the periphery shows the myelin degeneration, the center of the spinal cord is intact. The nerve roots on either side are normal. (Weigert myelin sheath stain).

TABLE 2.—*Control Protocols*

Dog	Weight, Kg.	Solution Injected	Comment
21	26.0	10 cc. physiologic sodium chloride	Animal not injured in any way
22	15.5	6 cc. physiologic sodium chloride	Animal in good condition soon after injection; no permanent effects
23	23.0	5 cc. of 40 per cent dextrose	Animal gave signs of discomfort for 37 minutes; became quiet soon afterward and was in good condition within an hour; no permanent effects
24	20.2	5 cc. of 40 per cent dextrose	Throughout period of observation, which lasted 1 hour and 13 minutes, animal in good condition
25	25.0	5 cc. of 18.5 per cent urea	Animal in good condition the following day; urea caused slight anesthesia
26	....	No injection	Brain normal; medulla and cervical and upper thoracic portions of cord negative with Weigert's and hematoxylin and eosin stains

A similar experiment was carried out with a solution of urea (18.5 per cent), which was made isotonic with 25 per cent solution of procaine. As might have been expected, the urea produced slight anesthesia for a short period, but there were no permanent effects.

Comment.—These experiments have shown rather conclusively that the concentration of procaine used in spinal anesthesia is quite as important as the total dose. Consequently, recommendations concerning the dose of anesthetic agent, in terms of body weight, should always be accompanied by recommendations concerning the concentration in which the agent should be given.

We are unable to offer any satisfactory explanation for the permanent effects of certain doses of procaine in certain concentrations. It has been shown that the permanent changes in the cord that result in permanent paralysis of the hind limbs of dogs given 5 cc. of from 20 to 25 per cent solution of procaine are not due to intradural pressure or to the osmotic pressure of the solution. It might be argued that the long period of low blood pressure that invariably accompanies such spinal anesthesia might result in anemia of the spinal cord, but in certain instances permanent effects did not follow complete respiratory paralysis that endured nearly three hours, during which time we have reason to believe the blood pressure remained at a level comparable to that of dogs permanently affected.

The central nervous system of the dog is capable of withstanding the action of huge doses of procaine. The doses used for man are proportionately much less. It is probable, therefore, that many of the accidents following the use of spinal anesthesia in man are due to factors other than the action of the anesthetic agent. This may not be true of some other local anesthetics, since Spielmeyer,[4] working with dogs and monkeys, obtained with stovaine (amylocaine hydrochloride, B. P.), in a maximal dose of 140 mg., lesions in the cord similar to those we obtained with procaine, except that in certain instances with minimal doses he obtained maximal effects. He stated that these degenerative changes in the cord are due to the contact effect of the drug on the myelin sheaths. This explanation is not

Fig. 2.—Normal dark staining myelin sheaths on the left. On the right, almost complete destruction and loss of staining properties of the myelin. Numerous scavenger cells contain undigested or undegenerated fragments of myelin. In the intermediate zone are some swollen and disintegrated myelin sheaths. (Weigert myelin sheath stain, × 125).

4. Spielmeyer, W.: Veränderungen des Nervensystems nach Stovainanästhesie, München. med. Wchnschr. **2**: 1629-1634 (Aug. 4) 1908; Pseudosystemerkrankungen des Rückenmarkes nach Stovainanästhesie, Neurol. Centralbl. **28**: 69-80 (Jan. 16) 1909.

entirely satisfactory in the case of our experiments, but we have nothing better to offer.

HISTOLOGIC CHANGES

There were definite changes in the spinal cords of dogs of which the hind limbs became permanently paralyzed. These changes were constant in that they affected the periphery of the spinal cord and did not penetrate deeply into its substance, but they varied slightly in the depth to which they penetrated and the distance to which they extended toward the medulla oblongata. There was destruction of the myelin sheaths in the zone beneath the pia mater, in the posterior, lateral and anterior columns of the spinal cord. The myelin sheaths were swollen, nodular and fragmented, associated with the formation of large vacuoles, giving these portions of the spinal cord a spongy appearance. The axis cylinders were also swollen, nodular and fragmented. The degree of destruction of the myelin sheaths and axis cylinders depended, in part, on the survival period of the animal after the injection. The degeneration of the myelin sheaths was limited almost exclusively to the subpial zone; there were no degenerative changes in the ganglion cells. The pia mater and the arachnoid were not thickened, and there was no inflammation in the subarachnoid space. There were no polymorphonuclear leukocytes or lymphocytes in the substance of the spinal cord, but there were many scavenger cells in the zone of degeneration of myelin sheaths. The nerve roots, anterior and posterior, which were present in the subarachnoid space did not have any destruction of the myelin sheaths or axis cylinders but appeared normal. Yet these were subjected to the same pressure as the periphery of the spinal cord and were also completely surrounded by the solution of procaine. All the blood vessels in the subarachnoid space and in the spinal cord appeared to be quite normal, and no thrombosis or occlusion was present. There is no satisfactory anatomic or physical explanation of the destruction of myelin sheaths in the periphery of the spinal cord which at the same time will explain the fact that the nerve roots in the subarachnoid space escape a similar fate.

INFERENCES

The results obtained clinically with the method of spinal anesthesia used at the Mayo Clinic and those obtained in these experiments are strikingly similar in one respect. Clinically, it is obvious that a dose of procaine will produce different degrees and duration of anesthesia, depending somewhat on its dilution as it is injected into the spinal fluid. For example, 3 cc. of 5 per cent solution (150 mg.) gives more profound and longer anesthesia than 5 cc. of 3 per cent solution (150 mg.). Experimentally, it became obvious that the results were constant with respect to so many cubic centimeters of a certain concentration of solution of procaine injected into an animal. Every animal that became permanently paralyzed died from four to ten days after injection of the anesthetic intraspinally, whereas none of the animals died that were not permanently paralyzed. In order to keep the paralyzed animals alive long enough for the lesion to be visible it was necessary to catheterize them, to tube feed them with milk and syrup, and to nurse them carefully for days. Five cubic centimeters of 20 per cent solution, or of solution of greater concentration, caused permanent paralysis. Five cubic centimeters of 17.5 per cent solution or of solution of lesser concentration did not cause permanent paralysis. Also, a small quantity, 2.5 cc. of 50 per cent solution, even, did not produce permanent paralysis, and 10 cc. of 12.5 per cent did not produce permanent paralysis.

We have had one clinical case, that of a small man who was to be operated on for bilateral inguinal hernia, and 2 cc. of 10 per cent solution of procaine (200 mg.) was injected between the third and fourth lumbar vertebrae. On the following day the patient had some difficulty in moving his legs, was unable to void the urine, had to be catheterized, and had some abdominal distention. On the next day these effects had disappeared and except for these symptoms, which existed for twenty-four hours, convalescence was uneventful.

Since this experience we have avoided the use of solutions stronger than 7 or 8 per cent and commonly employ concentrations of 3, 4 or 5 per cent solution as it leaves the syringe.

The results here reported deal with spinal cords which there is every reason to believe were normal. It is desirable to know the effect of procaine on abnormal spinal cords because, throughout the literature, abnormality of the central nervous system is given as a contraindication to spinal anesthesia. A question has been raised as to the possibility of injury from the ordinary dose of procaine and also apothesine[5] to a spinal cord in which there is already pathologic change. Judging from our experiments, it seems probable that when paralysis follows the use of ordinary doses of a spinal anesthetic agent, the spinal cord was previously diseased. If this hypothesis is correct, it would be difficult to determine, in a given case, that the spinal anesthetic had done more than precipitate the clinical symptoms that would have come on gradually at a later period, even if the spinal anesthetic had not been given.

ABSTRACT OF DISCUSSION

DR. HALE HAVEN, Chicago: My associates and I used in our animals concentrations of the agent comparable to those used in man. With the Marchi method from twenty to thirty days after injection, we were able to see myelin changes somewhat similar to those described by the authors. In our experience, these changes were likewise present in the nerve roots. In all cases at this time we were able to note passive changes in the ganglion cells of the gray matter similar to those seen in retrograde or so-called wallerian degeneration. We did not feel these degenerative changes were permanent, because they were absent or evident only to a slight degree in animals kept alive ninety days. In in vitro experiments with concentrations of procaine as low as 0.5 per cent in physiologic solution of sodium chloride, the spinal cord showed peripheral neurolysis similar to that demonstrated by Weil, saponin and other neurotoxins being used, and quite similar in their Weigert picture to the slides shown here. The most constant change observed and one which appeared permanent was a sterile inflammatory reaction of the meninges which, in the older animals, reached a state of fibrotic scarring. The change was so constant and so seemingly more pronounced in those receiving larger doses that I am at a loss in explaining the difference between the authors' results and ours. I should like to ask if they have any explanation, if they observed their animals as long as three months, and if the changes were still present. I should also like to know if they made any investigation of the condition of the ganglion cells of the gray matter with specific stains for Nissl granules. Because of the milder and more passive changes that we observed in the nerve roots and in the ganglion cells, it was our feeling that the drugs used had a myelolytic effect, and that the anesthesia and paralysis was due to this myelolytic effect. I wonder whether the authors have come to any conclusions from their experiments with regard to the mode of action of the substance.

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5. Lindemulder, F. G.: Spinal Anesthesia: Its Effect on the Central Nervous System, J. A. M. A. **99**: 210-212 (July 16) 1932.

DR. JAMES W. KERNOHAN, Rochester, Minn.: There seems to be some diversity of opinion about the effects of procaine on the central nervous system. It must be remembered that the anatomy of the dog is different from that of man. In the dog, the dura mater and the arachnoid completely and closely surround the spinal cord, just as a rubber glove surrounds the finger, and in that respect are quite different from the pia and dura mater around the spinal cord of human beings. Consequently, pressure alone may be of importance. It was on that basis that Dr. Essex used other solutions, such as dextrose and urea, but found again that alone they had no effect on the cord. I would like to draw attention to the appearance of the spinal cord in which degeneration was limited to the periphery. The nerve roots, lying free in the subarachnoid space and completely surrounded by the procaine, were not affected by it. This was constant throughout the series, and there were no changes in the cells of the anterior horn. I feel that the procaine does not have any demonstrable or permanent effect directly on the normal myelin. These dogs died from about eight to twenty days after the anesthesia had been given and there was no inflammatory reaction, either in the nerve roots here or in the subarachnoid space. There was some reaction in the spinal cord, but this was the result and not the cause of the degeneration. Scavenger cells were present in large numbers. What would have happened at the end of three months, I cannot say.

DR. HIRAM E. ESSEX, Rochester, Minn.: We are in accord with Dr. Haven; we think these lesions are due to the toxic action of the drug on the cord. We have ruled out the probability of their being due to a pressure phenomenon or to an osmotic action of the drug.

STRICTURE OF THE RECTUM

SOME OF ITS PROBLEMS

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The study of stricture of the rectum is as fascinating as the treatment is discouraging. The etiology for the most part is unverified, the literature is confusing, and the compilation of statistics by various authors is not standardized. I had intended to classify stricture as to the apparent pathologic conditions such as syphilis, gonorrhea, tuberculosis or those following simple pyogenic infection. In looking over my statistics I found this to be absolutely impossible and was forced to look for some reason for this condition.

In my study I was confronted with the following questions:

1. Why should the occurrence be most usual between the ages of 20 and 40?
2. Why is the Negro race peculiarly susceptible?
3. What is the relationship of stricture to venereal diseases, namely, syphilis and gonorrhea, and to tuberculosis?
4. What importance can be attached to a history of pelvic inflammation or pelvic operation in the female?
5. Why does it occur most frequently in the female?

In a series of 227 cases, tabulated by Dr. Harry E. Bacon from the records of the Graduate Hospital of the University of Pennsylvania, and the Philadelphia General Hospital, I note that only ten cases occurred before the age of 20, while 204 were noted between 21 and 50 (90 per cent). There was a marked decrease between 41 and 50, but after 50 there were only thirteen cases noted. Of the first ten cases, seven were known to be congenital; probably the other three may be included under this classification. After 50 years of age there is a sudden drop from thirty-seven in the previous decade to six, four and three in the three succeeding ten year periods. I can interpret this to mean only that stricture appears most frequently during the period of marked sexual activity. The age incidence of the patients corresponds very closely with tables published by Rosser,[1] Buie [2] and Hayes.[3]

The marked reduction in number in the last years of life may be due to the fact that these patients rarely survive after the age of 50.

It is rather curious to note that 167 of our cases, or 81.6 per cent, occurred in the Negro race, and all these were females. There are still twenty-one cases in which the color was not mentioned, so that the percentage may be even greater. Rosser seems to think that the prevalence of stricture in the Negro race may be accounted for partly by the racial predisposition to develop massive inflammatory deposits, which tendency he named "fibroplastic diathesis." For many years the term "negromata" has been used by us as best describing these peculiar tissue masses. Rosser also believes that the Negro is particularly susceptible to venereal infection, as the result of the social conditions under which he lives. It is unfortunate that there is no close check up in the tables as to how many of the females were Negro or white. Our own tables are incomplete in the same detail.

As far back as 1811, Copeland [4] stated that there seemed to be some relationship between the formation of rectal stricture and venereal diseases and that the subject should be investigated. Since that time various authors have tried to classify stricture as being due to syphilis, gonorrhea or tuberculosis. It would seem to me that this classification is not practical, as frequently I see two or more of these diseases present in the same patient. It is much like accusing the patient of eating horsemeat because a saddle was found under the bed.

The foregoing summary convinced me that something was wrong with my point of view. Since February, we have tried to make a detailed study of fifteen cases of rectal strictures under treatment in the Graduate Hospital, and ten others made available through the courtesy of other institutions. All of the patients were Negro females; the youngest was 22 and the oldest 48. No stricture has been noted in the male in our service for two years, provided congenital stenosis and a few postoperative contractions at or near the anorectal line are excluded. These patients all had massive perirectal deposits of inflammatory tissue, with marked contraction of the lumen of the bowel and multiple rectal and perirectal infections, with fistulas involving the perianal area. Rectovaginal fistula was frequently noted, and two cases showed marked involvement of the vulva. Many of these patients gave a history of previous pelvic infection and pelvic operations, the exact character of which could not be ascertained. The more I studied these cases, the more I became convinced that there must be some specific cause for the peculiar pathologic condition encountered in the Negro race. It was suggested to me as a possibility that an infection which produced a condition named "lymphogranuloma inguinale" (climatic bubo) might play a part in this picture. In 1913, Durand, Nicolas and Favre of Lyons demonstrated that climatic

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1. Rosser, Curtice: Rectal Pathology in the Negro, J. A. M. A. 84: 93 (Jan. 10) 1925; Clinical Variations in Negro Pathology, ibid. 87: 2084 (Dec. 18) 1926.
2. Buie, L. A.: Benign Strictures of the Rectum, J. A. M. A. 81: 1357 (Oct. 20) 1923.
3. Hayes, H. T.: Stricture of the Rectum, Tr. Am. Proc. Soc., 1931.
4. Copeland, Thomas: Diseases of the Rectum and Anus, Philadelphia, 1811.

bubo and lymphogranuloma inguinale were a single entity. Wolf and Sulzberger suggested the term "lymphopathia venereum" as a substitute in terminology to avoid confusing the condition with the granuloma inguinale, in which disease Donovan bodies are seen in sections of the tissue. In looking up the literature in the quarterly index, one is struck by the many titles of papers under the heading "lymphogranuloma." It is no wonder that the condition has been overlooked by us as proctologists, since the titles of practically all the papers seem to refer entirely to urology or dermatology.

Apparently this disease was noted first in the male Negro, as the term climatic bubo would indicate. It has been described as a small initial lesion on the penis which appears from six to thirty days after intercourse. The primary lesion is small, painless and frequently unnoticed by the patient. It is nonindurated and nonsuppurating, with sharply defined edges. The inguinal glands are involved early, usually in from one to two weeks following the initial lesion. They become swollen and slightly tender. The overlying skin becomes reddened and later violaceous. The glands mass together, with hard areas interspersed with softening. The disease is chronic and after months and years heals with dense scar formation and retraction of tissue.

Sulzberger and Wise[5] say that rectal lesions are the inevitable sequel. Remembering that the lesions described occur in the male, I doubt this sequence of events and feel that it would be hard to show anatomically how stricture of the rectum would follow infection of the penis and inguinal glands. When the picture is carried further and it is seen that the female is infected through sexual relationship, and that this infection enters the cervix and posterior vaginal wall, it may be believed that perirectal and extra-uterine infection of the lymph channels and vascular systems may take place.

While no specific cause of infection has been discovered, it is believed that the infection is probably due to a filtrable virus. In 1925, William Frei suggested a clinical test of this disease, procuring an antigen from pus removed from the broken down inguinal glands. This is a dermal test and is quite simple to apply. In testing my cases I had to rely on outside sources for specific antigens. My first supply was obtained through the kindness of Dr. Descum McKenney of Buffalo. Later, a generous quantity was received from Dr. H. F. DeWolf of Cleveland. A control antigen was made of macerated inguinal glands removed from presumably healthy patients who had been operated on for hernia.

A positive Frei reaction was obtained in twenty of the twenty-five cases, certainly a far greater number of patients than we found to have syphilis, gonorrhea or tuberculosis. It is just possible that this is a type of infection peculiar to the Negro race, just as granuloma inguinale is rarely found in white persons. Parenthetically, it might be a subject for study whether or not lymphopathia venereum and granuloma inguinale are not the same disease or at least clearly related. A history of previous pelvic operations, instead of indicating that the stricture followed the operation, might indicate that the patients were operated on because they had distinct symptoms referred to the pelvis and adnexa.

For the relief of these great sufferers we have tried many expedients, such as proctotomy with or without dilation, external proctotomy, after the method of Jelks, carbon dioxide snow, and colostomy. Many of the patients have been benefited but none cured. It is my firm belief that for the prolongation of life most of these patients must sooner or later have a permanent colostomy performed. To my mind, this would be the operation of election. Systematic treatment, with local drainage of the collections of pus, are indicated at all times. We have not decided on any medication. Apparently there isn't anything known now.

It would be impossible to go into detail as to the symptoms, clinical course and treatment of these cases in the space allotted, but I feel that our few cases materially change the statistics of inflammatory rectal stricture. The following views are believed by me to be essentially correct. Much investigation is necessary before they can be verified. This will take considerable time, but I feel that this may be considered a preliminary report. These views may be tabulated as follows, any single one of which might make a subject for extensive research:

1. Inflammatory stricture of the rectum primarily is due to a specific infection, classified variously as lymphogranuloma inguinale, climatic bubo or, more appropriately, lymphopathia venereum.
2. It is a disease peculiar to the Negro, possibly because of some racial susceptibility.
3. In the female, the disease is expressed as a stricture; in the male the prominent features are a primary sore on the penis followed by an adenitis, which frequently suppurates.
4. Acute inflammatory symptoms are absent, except periodically, patients complaining little of acute pain.
5. The disease is slowly progressive, extending over periods of months or years, resulting in rather massive destruction of normal tissue.
6. To date, the disease may best be described as incurable and tends toward an inevitable fatal termination.
7. The condition is probably more widespread than one realizes and probably is very infectious, particularly to the Negro race.
8. In view of the seriousness of the complications following these infections, it certainly would seem that all cases should be reportable to attempt to lessen the spread of the condition.
9. Lymphopathia venereum, whether expressed as an adenitis in the male or as a rectal stricture in the female, well deserves the name given it of the fourth venereal disease and might well be placed near the top of the list in importance.

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5. Sulzberger, M. B., and Wise, Fred: Lymphopathia Venereum, J. A. M. A. **99**: 1407 (Oct. 22) 1932.

ABSTRACT OF DISCUSSION

DR. CLYDE W. MORTER, Milwaukee: All must agree with Dr. Martin's opening statement: "The study of stricture of the rectum is as fascinating as the treatment is discouraging." Is any one prepared to say that tuberculosis is the causative agent in stricture, or that it has any connection with it except as a secondary infective factor? Reverse the hypothesis and assume that tuberculosis is the exciting factor—what then becomes of the part played by secondary infection? All have seen patients with acute gonorrhea of the rectum recover without stricture. Can it be said, then, that a stricture due solely to gonorrhea ever occurs? My belief is that stricture is the culmination of a series of unfortunate events that finally result in extensive narrowing of the lumen of the bowel and that the bowel itself is surrounded by a dense chronically active inflammatory mass. The chronicity persists as the result of a low grade mixed infection, which often continues even with every

effort at drainage. Dilation by any method is unsuccessful as long as infection is present and is even capable of lighting up an infection in a dormant area. It is fully agreed that in the majority of intractable strictures a colostomy is not only advisable but a necessary procedure. Dr. Martin gives some interesting data in his series of cases with granuloma inguinale antigen reactions. Milwaukee has a relatively small Negro population. The records of Milwaukee County Hospital and Milwaukee County Hospital Dispensary brought out the interesting fact that only three cases of granuloma inguinale have been noted during the past six years. All have responded to treatment with antimony and potassium tartrate. I should like to ask Dr. Martin, if the idea that there is a specific test for granuloma inguinale is accepted, whether he thinks that by this means it will be possible to recognize lymphogranuloma early enough to institute treatment that will materially control its complications and duration. I should like to call attention to the recent report of Dr. Williamson and his collaborators in THE JOURNAL, May 27, regarding the use of a newly recognized preparation, "Fuadin."

DR. HERBERT T. HAYES, Houston, Texas: The predisposition to scar formation in the Negro was brought out by Dr. Rosser several years ago and he partially attributed the prevalence of stricture to this. I too hold this view. In all probability the few white people who develop strictures also have this scar-forming tendency. The various forms of ulceration that occur in the rectum from bacterial invasion begin its formation. Dr. Martin states that these cases are more frequent between the ages of 20 and 40; that is, during the most active sexual life. Strictures are more frequent in the female than in the male and are much more frequent in the colored female than the white. I believe that gonorrhea is the infection most often responsible. I have observed the formation of a stricture in cases of gonorrheal proctitis, in spite of all forms of treatment. The low percentage in the male is accounted for by the rarity of infections in the rectum. The Negro male has a higher percentage of urethral strictures and he has a gonorrheal urethritis more frequently. There are strictures resulting from various other infections. In regard to lymphogranuloma inguinale, the reports have been confusing. I do not believe enough data have been presented to ascertain whether it is a causative factor in rectal stricture. Some men are reporting a high percentage of positive Frei tests and others are not; however, there is a high percentage of positive Wassermann tests in stricture, but that does not prove them to be syphilitic. The cases that I thought were definitely lymphogranuloma inguinale presented the characteristic swollen inguinal glands, discharging sinuses and elephantiasis of the vulva, anus and rectum. However, this is a new field of research and I hope that open-minded investigation will be fruitful of results. I agree with Dr. Martin that all forms of treatment, such as dilations, proctotomies, carbon dioxide snow and plastic operations, have proved to be only palliative measures and that these patients ultimately have to have a permanent colostomy.

DR. A. A. GOLDSMITH, Chicago: I should like to bring up the question of the possibility of dilation of the strictures. I have had rather a small series compared to Dr. Martin. I have had two or three I could dilate rather efficiently. One was in a white man in whom it came on one year after an acute gonorrhea, at the time he was taking treatment for posterior urethritis. I have been able to keep the rectum open satisfactorily for several years. I see the patient once every two or three months and he has had no further trouble except some irritation. Another patient was a colored woman with marked stricture formation and it was possible to dilate her rectum. I agree that most of them cannot be dilated because of the tortuous channel about four inches long, which has many angles. In those two cases it was possible to dilate the stricture satisfactorily and I feel that these patients are better off now than they would be with a permanent colostomy.

DR. M. H. STREICHER, Chicago: At the University of Illinois we have had occasion through the cooperation of the dermatology department to obtain approximately nineteen cases of this type. In the group there were two white females and only one white male. There can be no question that not all the cases are venereal, gonorrheal or syphilitic. At the Cook County Hospital, through the courtesy of Dr. Jaffe, I have had the opportunity to study two postmortem cases, the only two on record in Chicago at present. They have been reported by the dermatologists before this time. A distinction is made pathologically from tuberculosis; namely, that in tuberculosis there is caseation while in lymphogranuloma inguinale there is suppuration. In all the cases that we have had, the Frei test has been positive. The cases, of course, were seen in the terminal stage.

DR. E. JAY CLEMONS, Los Angeles: I have maintained for fifteen years that rectal stricture is not a surgical disease. I have at present the carbon dioxide rectal stricture clinic of the Los Angeles County General Hospital. I handle certain of my problems as follows: Into the discharging sinuses I instil pure phenol (carbolic acid). The result is that most of these discharging sinuses close. Into the bowel I insufflate once in a week 4 liters of carbon dioxide gas under pressure of one-tenth pound to the square inch. Because carbon dioxide is the most potent agent in combating saprogenic infection, the purosanguineous discharge from the rectum ceases. Carbon dioxide is absorbed from the rectum by the venous circulation and is carried to the lungs, producing there hyperventilation due to the excessive diffusion of gases. At the same time the excessive carbon dioxide in the body produces neutrality of the body fluids. In this way acidosis is lowered, the arthritis disappears, and the general health of the patient markedly improves. After the patient's general health has improved, the discharging sinuses have closed and the discharge from the rectum has become quiescent, I abstract enough heat with solid carbon dioxide to produce a profound edema of each cell of the remaining uncomplicated stricture. The consequence is that the hard, fibrous tissue changes to a soft, elastic state, and as the result the stricture opens.

DR. JOHN L. JELKS, Memphis, Tenn.: In the South the cases are chiefly among Negroes. I have seen one white woman with this condition. Strictures of the anus should be classified properly first in contradistinction to those of the rectum; secondly, they should be classified scientifically on an etiologic and pathologic basis. There are amebic strictures, tuberculous strictures, and strictures due to streptococcic infections and other conditions, but this is an entity. It is apparently a local and not a systemic condition. I want to suggest to those who are making special studies to examine their cases in every way before they begin treatment, for treatment may destroy the opportunity to learn much about the condition per se. In addition to antimony and potassium tartrate they might try a 20 per cent solution of copper sulphate and push it into the tissues with the electrical apparatus. Operation is not of any avail in these cases. Dilation cannot be done. Colostomy is indicated first to get rid of the foul secretions, which occur in women in the proportion of about 95 per cent.

DR. COLLIER F. MARTIN, Philadelphia: I cannot answer these questions accurately, as my contacts with the cases have been too brief. Certain points have been stressed, principally the relationship to race and sex. All of the twenty-five cases reported were in women and all but one were colored. Ten out of the twenty-five gave a positive Wassermann reaction; twenty-one gave a history of a previous pelvic operation or a gynecologic history. A Frei test was recorded as negative in only two cases. One of these patients was colored and the other was a white patient in whom a lymphopathia was not suspected. The percentage of positive cases certainly is surprisingly large. I feel that Dr. Morter has the granuloma inguinale in mind and not the lymphogranuloma inguinale or lymphopathia venereum. Antimony and potassium tartrate is certainly fairly efficient in treatment of the former disease, but Dr. Descum McKenney tells me that he has had some encouraging results in the treatment of lymphopathia venereum. The new drug Fuadin, which may be given hypodermically and not intravenously as is antimony and potassium tartrate, seems to offer some advantages. This will be tried if a supply can be made available. The Graduate School of the University of Pennsylvania, being located in an area populated principally by Negroes, offers a fertile field to obtain cases for study. Unfortunately it is rather hard to obtain a consecutive history from a member of this race and the recorded figures may present some inaccuracy. This work will be continued and further reports will be forthcoming.

PRODUCTION OF ESTRUS

RELATIONSHIP BETWEEN ACTIVE PRINCIPLES OF THE PLACENTA AND PREGNANCY BLOOD AND URINE AND THOSE OF THE ANTERIOR PITUITARY

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There are three distinct substances in the human placenta that are capable of producing estrus precociously when administered to immature rats or mice; the first is ether soluble, the second ether insoluble but alcohol soluble, the third alcohol insoluble. From the ether-soluble fraction Browne,[1] in our laboratory isolated an active principle in crystalline form; it proved to be identical with trihydroxy-estrin or theelol, whose most characteristic physiologic property is that, while highly active in immature intact rodents, it is relatively less active in adult or immature ovariectomized animals; possibly, as we have suggested, because in the presence of ovarian tissue it undergoes conversion into some more active modification such as ketohydroxy-estrin (theelin). The active principle of the second fraction has been termed emmenin in a previous report;[2] it displays the same characteristic property, and we believe it to be a compound of trihydroxy-estrin with some unknown substance that alters the solubility without greatly modifying the physiologic properties; it certainly requires the presence of ovarian tissue in order to display its full estrogenic activity, but it does not appear to stimulate the ovary and it has no marked action in male animals. The alcohol-insoluble fraction, however, does stimulate the ovaries, causing the precocious formation of ripe follicles and corpora lutea when injected into immature female rodents and hence secondarily giving rise to the phenomena of estrus. It is with this fraction that the present discussion is chiefly concerned.

There is no reason to doubt that this ovary-stimulating substance is identical with the ovary-stimulating substances which circulate in the blood and are copiously excreted in the urine during pregnancy in the human female and which are the basis of the Aschheim-Zondek and Friedman tests for pregnancy and their modifications. In fact, we have latterly used preparations from pregnancy urine in preference to placental preparations, and we firmly believe that the results are completely interchangeable. On the other hand, from the time of our first publications[3] on this subject, we have always maintained that this substance is not identical with the ovary-stimulating substance present in the anterior lobe of the pituitary itself, and we have referred to the substance obtained from placenta or pregnancy urine as the "anterior pituitary-like hormone," a description which has commended itself to several other workers in this field. At first our reasons for drawing this distinction were slight differences in the physiologic response of normal animals to these substances, and the fact that the methods which extracted this substance from the placenta yielded only inactive preparations when applied to the pituitary itself. Recently, however, we have been able to devise and complete crucial and convincing experiments to prove the point, by investigating the behavior of the anterior pituitary-like hormone in hypophysectomized animals.

Smith[4] was the pioneer in the study of the consequences of hypophysectomy in the rat; he showed, among many other important results which we have been able to confirm and extend, that the ripening of follicles in the ovaries ceased promptly and completely; the ovaries atrophied, and the animals became permanently anestrous. Almost normal structure and activity could be restored to the ovaries, however, by implanting fresh hypophyseal material intramuscularly; and we have found that this result can also be attained by the administration of suitable extracts. On the other hand, reports in the literature on the effect of treating hypophysectomized animals with the anterior pituitary-like hormone (or "prolan" or similar preparations) are conflicting, partly because the number of animals available for experimentation has always been small. One of us (H. S.) has been able, by a modification of Smith's operative procedure, to prepare a large number of hypophysectomized rats wherewith to study the question. Rats hypophysectomized before puberty are found to react to treatment with the anterior pituitary-like hormone, not as normal rats do with enlargement of the ovaries, ripening of follicles, production of corpora lutea and secretion of estrin, but by a somewhat inconspicuous and unexpected histologic change in the ovaries: the cells of the theca become transformed into luteal cells, while the granulosa cells are unaffected.

TABLE 1.—*Control Data Showing Effect of Varying Dosage of Anterior Pituitary-Like Hormone on the Weight of the Ovaries of 21 Day Old Normal Rats Treated for Five Days*

A. P. L. Daily	Number of Animals	Body Weight, Gm.	Weight of Ovaries, Gm.
40 units	7	36	0.036
30 units	2	45	0.045
20 units	2	41	0.036
10 units	2	40	0.033
5 units	7	43	0.033
2 units	5	46	0.027
1 unit	5	41	0.021
0.5 unit	4	42	0.010
0.25 unit	4	41	0.012

This discovery had previously been made by Noguchi,[5] and it suffices to dispose of the claims both of those who hold that anterior pituitary-like hormone behaves in the hypophysectomized rat as in the normal rat and hence might well be identical with the hypophyseal hormone itself, and of those who hold that the anterior pituitary-like hormone has no action in the hypophysectomized rat, and hence may be regarded as a pituitary-stimulating rather than an ovary-stimulating substance. It thus appears that the usual action of the

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1. Browne, J. S. L.: The Chemical and Physiological Properties of Crystalline Oestrogenic Hormones, Canad. J. Research **8**: 180 (Feb.) 1933. Butenandt, A., and Browne, J. S. L.: Vergleichende Untersuchung von Theelol, Emmenin, und Follikelhormonhydrat, Ztschr. f. Physiol. Chem. **216**: 49, 1933. Collip, J. B.; Browne, J. S. L., and Thomson, D. L.: The Chemical Nature of Emmenin, Endocrinology, to be published.

2. Collip, J. B.: The Ovary-Stimulating Hormone of the Placenta, Canad. M. A. J. **22**: 212 (Feb.) 1930.

3. Collip, J. B.: Further Observations on an Ovary-Stimulating Hormone of the Placenta, Canad. M. A. J. **22**: 761 (June) 1930. Collip, J. B.; Thomson, D. L.; McPhail, M. K., and Williamson, J. E.: The Anterior-Pituitary-Like Hormone of the Human Placenta, ibid. **24**: 201 (Feb.) 1931.

4. Smith, P. E.: The Disabilities Caused by Hypophysectomy and Their Repair, J. A. M. A. **88**: 158 (Jan. 15) 1927.

5. Noguchi, Ko: Ueber das Wesen der Zondek-Aschheimschen Schwangerschaftsreaktion, Jap. J. M. Sc. Pharmacol. **5**: 104 † (Sept.) 1931.

anterior pituitary-like hormone on the ovaries of the normal prepubertal rat or mouse (the Aschheim-Zondek reaction) is possible only because the hypophysis of the test animal is intact, and presumably because there circulates in the blood of the test animal a substance, originating in the pituitary, that is complementary to the anterior pituitary-like hormone and enables it to exert its full action on the ovary instead of merely producing thecal luteinization. In full confirmation of this view, it has been possible to show that small quantities of hypophyseal extracts, themselves possessed only of slight ovary-stimulating activity, are capable of acting in concert with the anterior pituitary-like hormone to produce ripe follicles and fresh corpora lutea; in short, the typical Aschheim-Zondek picture in the ovaries of hypophysectomized rats.

It is well known that when the anterior pituitary-like hormone and certain pituitary extracts are administered together to normal immature rats, the effect on the weight of the ovaries is much greater than when either is given alone; there is, in fact, a definite synergistic or complementary effect. Evans [6] who first drew attention to this phenomenon, believed that it was the pituitary growth hormone which was concerned therein; but we have found decisive evidence against this theory, as Evans [7] has also done. Nor is synergism with the anterior pituitary-like hormone displayed only by pituitary extracts of high gonad-stimulating potency; in fact, the substance responsible has not at present been identified with any of the known pituitary hormones. The very interesting question arises whether this substance, which enhances the action of the anterior pituitary-like hormone in the normal rat, is the same as the complementary substance required for the anterior pituitary-like hormone to exert its full effect in the hypophysectomized rat. At present this question cannot be decided; an affirmative answer appears to be reasonable a priori, and it may be said at least that the two types of activity are closely associated in their distribution in various types of pituitary extracts. The accompanying tables indicate the magnitude of the complementary effect of a pituitary fraction labeled C, on the action of the anterior pituitary-like hormone in the normal rat. This C fraction is devoid of growth-promoting power; it is, however, by no means pure even in a physiologic sense. The question is of more than academic interest; the anterior pituitary-like hormone has proved its therapeutic value, especially in the treatment of certain types of uterine hemorrhage,[8] and it seems entirely possible that its scope could be considerably extended by giving in combination with it sufficient amounts of a purified pituitary extract to exert a complementary effect in the sense discussed. This would, at least, be more economical than relying on the expensive pituitary material to provide the whole of the physiologic activity required.

TABLE 2.—*Effect on Weight of the Ovaries of 21 Day Old Normal Rats Treated for Five Days with a Purified Anterior Pituitary Extract, Alone and in Combination with Anterior Pituitary-Like Hormone*

Bidaily Doses of Ant. Pit. C, 1 Cc. ⅔ Gm. A. P.	Daily Doses of A. P. L.	Number of Animals	Body Weight, Gm.	Weight of Ovaries, Gm.
½ cc.	.....	4	38	0.021
¼ cc.	.....	5	39	0.014
⅛ cc.	.....	5	43	0.012
1/16 cc.	.....	5	46	0.013
½ cc.	40 units	4	36	0.153
¼ cc.	40 units	6	44	0.072
⅛ cc.	40 units	6	44	0.046
1/16 cc.	40 units	6	47	0.046
¼ cc.	20 units	6	46	0.065
¼ cc.	10 units	6	34	0.059
¼ cc.	5 units	6	44	0.039
¼ cc.	1 unit	6	59	0.034

TABLE 3.—*Similar Results as in Table 2*

Bidaily Doses of Ant. Pit. C1	Daily Doses of A. P. L.	Number of Animals	Body Weight, Gm.	Weight of Ovaries, Gm.
½ cc.	.....	9	36	0.032
¼ cc.	.....	6	31	0.019
⅛ cc.	.....	6	40	0.017
½ cc.	40 units	4	31	0.088
¼ cc.	40 units	5	30	0.061
⅛ cc.	40 units	6	32	0.042
1/16 cc.	40 units	5	39	0.033
1/32 cc.	40 units	5	44	0.039
¼ cc.	30 units	5	39	0.066
¼ cc.	20 units	5	37	0.074
¼ cc.	10 units	4	39	0.064
¼ cc.	5 units	10	47	0.053
¼ cc.	2 units	5	46	0.047
¼ cc.	1 unit	5	41	0.042
¼ cc.	0.5 unit	5	37	0.035
¼ cc.	0.25 unit	5	37	0.022
⅛ cc.	1 unit	4	40	0.020
⅛ cc.	0.5 unit	4	41	0.019
Boiled 35 minutes				
1 cc.	.....	4	35	0.034
1 cc.	5 units	4	36	0.088
1 cc.	40 units	4	26	0.085

It is by no means easy to correlate these discoveries with demonstrations, such as that recently offered by Hisaw,[9] that the gonad-stimulating activity of the pituitary extracts themselves can be split into two fractions, one causing purely follicular development and the other acting in conjunction with the first to produce luteinization. Since these experiments are not carried out on hypophysectomized animals, they cannot be compared directly with our own, and at present no plausible unifying hypothesis presents itself. With regard to the alleged multiplicity of the anterior pituitary-like hormone, the situation is possibly clearer. As is well known, Zondek [10] believes that the ovary-stimulating effect of pregnancy urine preparations is due to the combined action of a follicle-stimulating "prolan A" and a luteinizing "prolan B." None of the many workers, including ourselves, who have carried out far-reaching purification of this material, have seen any sign of separation of these effects, and indeed the only evidence for Zondek's theory is the existence in certain urines, not collected during pregnancy, of an ovary-stimulating substance which has a predominantly follicle-stimulating effect and which Zondek regards as "prolan A." Believing as we do that the anterior pituitary-like hormone of pregnancy urine is derived from the placenta and is not necessarily identical with any truly hypophyseal principle, we are forced to suppose that when substances of this nature appear in the urine in the absence of tissue of placental type they must have a different origin (presumably hypophyseal) and may possess different physiologic properties. The testing of

6. Evans, H. M.; Meyer, Karl, and Simpson, Miriam E.: Relation of Prolan to the Anterior Hypophyseal Hormones, Am. J. Physiol. **100:** 141 (March) 1932.

7. Evans, H. M.; Simpson, Miriam E., and Austin, P. R.: The Hypophyseal Substance Giving Increased Gonadotropic Effects When Combined with Prolan, J. Exper. Med. **57:** 897 (June) 1933.

8. Campbell, A. D.: Further Studies on the Anterior-Pituitary-Like Hormone, Lancet **2:** 561 (Sept. 10) 1932.

9. Fevold, H. L.; Hisaw, F. L.; Hellbaum, A., and Hertz, R.: Sex Hormones of the Anterior Lobe of the Hypophysis; Further Purification of a Follicular Stimulating Factor and the Physiological Effects on Immature Rats and Rabbits, Am. J. Physiol. **104:** 710 (June) 1933.

10. Zondek, Bernhard: Die Hormone des Ovariums und des Hypophysenvorderlappens, Berlin, Julius Springer, 1931.

the so-called prolan A on the hypophysectomized rat may decide this question.

A feature that soon becomes prominent in research in this field is the existence of quantitative species differences; Loeb [11] and Aron [12] in particular have done much service in revealing and emphasizing this fact. We [13] were able to confirm their finding that the anterior pituitary-like hormone administered to young female guinea-pigs does not produce a typical Aschheim-Zondek effect but leads to thecal luteinization similar to that seen in hypophysectomized rats. Since it had been found that very young suckling rats also responded in this modified way to injections of the anterior pituitary-like hormone, a fact which we confidently interpret as due to the failure of the pituitary at this very early stage to supply sufficient complementary substance, we at first considered that the guinea-pig pituitary also failed to supply this substance in adequate amounts. But it may well be that the ovary of the guinea-pig is adjusted to a different balance of the two active principles and requires relatively a much larger amount of complementary substance than the rat ovary. This might explain Loeb's finding that implants of hypophyseal tissue from various species differ in their effect on the guinea-pig ovary. By far the nearest approach to an Aschheim-Zondek reaction is obtained when the donor species is also the guinea-pig; we may suppose then that the guinea-pig's pituitary contains abnormally large amounts, relatively at least, of the complementary substance and is adjusted to the particular needs of the guinea-pig's ovary. This again is of possible medical significance, since the work of Engle [14] indicates that the primate ovary is in this respect more comparable to that of the guinea-pig than that of the rat. The situation may be compared to that which prevails with respect to the thyreotropic hormone; this is present in small amounts in the pituitary of the guinea-pig, which is very susceptible to the action of the substance, but is abundant in the pituitary of the relatively refractory rat.

TABLE 4.—*Effect on Weight of Ovaries of Hypophysectomized Prepubertal and Postpubertal Rats of a Purified Anterior Lobe Extract, Alone and in Combination with Anterior Pituitary-Like Hormone*

Bidaily Doses of Ant. Pit. C	Daily Doses of A. P. L.	Number of Animals	Body Weight, Gm.	Weight of Ovaries, Gm.
¼ cc.	.....	3	43	0.013
¼ cc.	10 units	4	40	0.041
	10 units	4	49	0.019
½ cc.	.....	3	124	0.040
	40 units	2	127	0.036
½ cc.	40 units	2	120	0.074

It is tempting to suppose that the gonad-stimulating pituitary extracts contain as one active principle a substance physiologically similar to the anterior pituitary-like hormone, though probably not chemically identical with it, accompanied by one or more adjuvant or complementary substances. One might even facetiously refer to the "placenta-like" component of such pituitary extracts; but it must be observed that this is by no means the only hypothesis for discussion and that, as we have already indicated, our present knowledge of gonad-stimulating pituitary extracts does not lend itself to treatment along these lines.

The experiments on which this paper is based have for the most part received preliminary publication [15] and will shortly be described more fully elsewhere.[16] Our experience with hypophysectomized rats in this investigation encouraged us to use them as test animals

TABLE 5.—*Similar Effects as in Table 4* *

Bidaily Doses of Ant. Pit. C₁	Daily Doses of A. P. L.	Number of Animals	Body Weight, Gm.	Weight of Ovaries, Gm.
¼ cc.	.....	4	39	0.019
¼ cc.	10 units	5	38	0.044
	10 units	4	49	0.019
1 cc.	.....	3	123	0.050
½ cc.	.....	3	124	0.047
¼ cc.	.....	4	135	0.034
½ cc.	40 units	2	114	0.075
½ cc.	20 units	4	134	0.071
½ cc.	10 units	3	136	0.073
¼ cc.	40 units	3	127	0.063
¼ cc.	10 units	3	89	0.029
Boiled 35 minutes				
1 cc.	.....	5	36	0.028
1 cc.	20 units	3	27	0.026

* The complementary and maturity effects of the pituitary extract still persist after boiling the extract, as also shown in table 3.

for the biologic assay of fractions obtained in a chemical dissection of anterior pituitary extracts. In this way we [17] obtained a preparation that restored growth in hypophysectomized rats and yet was free from effects on the thyroid gland or the gonads, even when tested in the highly sensitive immature dove.[18] From extracts from which the growth hormone had thus been removed we [19] prepared a fraction that stimulates the thyroid gland, as judged by histologic studies in normal guinea-pigs and normal and hypophysectomized rats, or, more advantageously, by its effect in raising the basal metabolic rate of hypophysectomized rats; these preparations, however, are not wholly devoid of effect on the gonads and suprarenals. More recently, we [20] have been able to obtain a fraction containing the adrenotropic hormone but practically without effect on growth, thyroid or gonads; it permits increase of size and restoration of the normal histologic picture of the suprarenal cortex in hypophysectomized rats. We [21]

11. Loeb, Leo: The Specificity in the Action of the Anterior Pituitary of Different Mammals as Well as of Urine of Pregnant Women on the Sex Organs and Thyroid Glands of Immature Female Guinea-Pigs, Endocrinology **16**: 129 (March-April) 1932.

12. Aron, Max: L'hormone préhypophysaire excito-sécrétrice des glandes endocrines génitales, Arch. d'anat. d'histol. et d'embryol. **15**: 237, 1933.

13. Selye, Hans; Collip, J. B., and Thomson, D. L.: Further Studies on the Production of Thecal Luteinization by Means of A. P. L., Proc. Soc. Exper. Biol. & Med. **30**: 780 (March) 1933.

14. Engle, E. T.: Differences in Response of Female Macacus Monkey to Extracts of the Anterior Pituitary and of Human Pregnancy Urine, Proc. Soc. Exper. Biol. & Med. **30**: 530 (Jan.) 1933.

15. Collip, J. B.; Selye, Hans, and Thomson, D. L.: Gonad-Stimulating Hormones in Hypophysectomized Animals, Nature, London **131**: 56 (Jan. 14) 1933. Selye, Hans, and Collip, J. B.: Production of Exclusively Thecal Luteinization and Continuous Estrus with Anterior Pituitary-Like Hormone, Proc. Soc. Exper. Biol. & Med. **30**: 647 (Feb.) 1933. Collip, J. B.; Selye, Hans; Thomson, D. L., and Williamson, J. E.: Replacement of Gonadotropic Action of Pituitary in the Hypophysectomized Rat, Proc. Soc. Exper. Biol. & Med. **30**: 665 (Feb.) 1933.

16. Collip, J. B.; Selye, Hans, and Thomson, D. L.: Beiträge zur Kenntnis der Physiologie des Gehirnanhanges, Virchows Arch. f. path. Anat., to be published. Selye, Hans; Collip, J. B., and Thomson, D. L.: Effect of the Anterior Pituitary-Like Hormone on the Ovary of the Hypophysectomized Rat, Endocrinology **17**: 494 (Sept.-Oct.) 1933.

17. Collip, J. B.; Selye, Hans, and Thomson, D. L.: Preparation of a Purified and Highly Potent Extract of Growth Hormone of Anterior Pituitary Lobe, Proc. Soc. Exper. Biol. & Med. **30**: 544 (Jan.) 1933.

18. Riddle, O.; Bates, R. W., and Dykshorn, S. W.: Preparation, Identification and Assay of Prolactin, Am. J. Physiol. **105**: 191 (July) 1933.

19. Anderson, Evelyn M., and Collip, J. B.: Thyreotropic Hormone of Anterior Pituitary, Proc. Soc. Exper. Biol. & Med. **30**: 680 (Feb.) 1933.

20. Collip, J. B.; Anderson Evelyn M., and Thomson, D. L.: Adrenotropic Hormone of the Anterior Pituitary Lobe, Lancet **2**: 347 (Aug. 12) 1933.

21. Selye, Hans; Collip, J. B., and Thomson, D. L.: Anterior Pituitary and Lactation: Effect of Hypophysectomy on Pregnancy and Lactation, Proc. Soc. Exper. Biol. & Med. **30**: 588, 589 (Feb.) 1933. Collip, J. B.; Selye, Hans, and Thomson, D. L.: Further Observations on the Effect of Hypophysectomy on Lactation, ibid. **30**: 913 (April) 1933.

have also shown that lactation, unlike pregnancy, cannot continue in the absence of the hypophysis and have recently been able to confirm this finding in experiments with hypophysectomized mice.

SUMMARY

The anterior pituitary-like gonad-stimulating substance of the human placenta and of human pregnancy blood and urine causes merely thecal luteinization when administered to hypophysectomized immature rats, to very young suckling rats or to guinea-pigs. Hence, when in the normal rat it produces enlargement of follicles and formation of corpora lutea, it does so by virtue of the presence of a complementary substance produced by the pituitary of the test animal. The presence of this complementary substance in pituitary extracts has been demonstrated; it is suggested that it may be identical with the substance which enhances the action of the anterior pituitary-like hormone on the ovaries of normal rats.

ABSTRACT OF DISCUSSION

DR. J. P. PRATT, Detroit: The presentation by Dr. Collip and his co-workers emphasizes the difficulty that clinicians experience in applying the fruits of the laboratory to the solution of clinical problems. The experiments on hypophysectomized rats can hardly be duplicated in man. Therefore the results they have obtained are applicable to human problems only through the dangerous and inaccurate process of reasoning by analogy. When the anterior pituitary-like substance is injected in rats and mice, corpora lutea are produced in the ovaries; but when injected in women no such reaction occurs. What response is elicited in the latter case is a subject of considerable interest. In approximately 100 human specimens examined after injection of the anterior pituitary-like substance I have seen only one that suggested corpora lutea stimulation. The observations do not show anatomic variations corresponding to the time in the menstrual cycle at which the injection was made, nor do they differ in proportion to the amount injected. Sometimes no reaction occurs in the ovary. If any change is characteristic, it is an increase in atretic follicles. Although only slight anatomic evidence of reaction to the anterior pituitary-like substance can be demonstrated in the human ovary, it is not without physiologic effect, for certain types of metrorrhagia are benefited or corrected by administration of the substance. In some instances the favorable response is obtained in a very short time after the injection. Perhaps the authors will explain the manner in which the reaction takes place.

DR. HARRY BECKMAN, Milwaukee: I find the whole subject so confusing that to hear a paper is of very little assistance to me. I am grateful to the authors for the excellent slides, which from the teaching standpoint are very valuable.

DR. J. B. COLLIP, Montreal: I thank Dr. Pratt for his discussion of the paper. The answer to the question he raised as to the mechanism by which the anterior pituitary-like hormone has given excellent clinical results in certain cases of metrorrhagia and menorrhagia cannot be given as yet. I think that Dr. Pratt is undertaking the problem in the correct way in that he is gradually collecting evidence by actual observation of the ovaries of patients who have been treated with so-called ovary-stimulating hormone extracts. I think that the point which we made in the paper about species difference is going to explain a lot of the difficulties. To illustrate this I may mention that a purified thyrotropic hormone fraction which we prepared had no maturity effect when tested on immature rats but produced a marked effect on the gonad of the young male dove when tested by Dr. Riddle. If our conception of the bipartate nature of the maturity factor is correct it is possible that there may be considerable species difference in regard to gonad sensitivity to one or another part of the maturity complex or to varying mixtures of these.

EMBOLECTOMY OF THE PERIPHERAL ARTERIES

REPORT OF THREE CASES

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Removal of emboli from the peripheral arteries is still an infrequent operative procedure, especially when one considers that these vascular accidents are not uncommon, and the results of conservative management are usually followed by serious consequences. The first attempt was made by Sabanejew [1] in 1895, at which time he removed an embolus from the femoral artery but was unsuccessful. Following his example, many surgeons attempted the operation of embolectomy without avail until Labey [2] in 1911 and Key [3] in 1912 successfully removed emboli from the femoral artery.

A careful review of the literature revealed 131 reported cases of arteriotomy for emboli of the peripheral arteries. The various facts included in these articles will be considered in the discussion.[4]

REPORT OF CASES

CASE 1.—L. S., a woman, aged 42, who entered the Michael Reese Hospital, March 7, 1932, under the service of Dr. William Buchbinder, had had rheumatic heart disease for many years, and for the past five weeks rapidly lost strength, had a continuous fever, and had gastro-intestinal upsets. On admission, the patient was acutely ill, cyanotic, and exhibited a moderate dyspnea. The lungs showed impaired resonance at both bases. The heart was enlarged to the right, and the apex was at the anterior axillary line. The rate was rapid and the rhythm showed an irregular irregularity. There were also a multiplicity of murmurs heard over the cardiac region. The legs were edematous and the liver was also enlarged.

March 12, at 6 p. m., the patient suddenly complained of severe pain, numbness and coldness in the right leg. The color was more or less ashen, and no pulsation was felt in the dorsalis pedis artery. The pain continued through the night, and next morning with increasing evidence of impaired circulation of the extremity. At 3 p. m., when seen in consultation, the diagnosis of popliteal embolus was confirmed and immediate operation advised.

Operation was performed under local anesthesia. An incision was made about 8 cm. in length in the right popliteal space and the popliteal artery was carefully exposed. There was a noticeable decrease in subcutaneous bleeding, and an absence of pulsation of the main artery. The field was kept saturated with sodium citrate solution during the entire operation. Small rubber constrictors were applied to the artery and an incision was made into the lumen of the vessel. No blood flowed from the vessel when the proximal constrictor was released, so that a small bore glass tube attached to a suction apparatus was inserted into the proximal part of the incised artery. After a few attempts with the suction, a small clot followed by several small particles of clot was withdrawn from the vessel. The blood soon rapidly flowed from the opening, and the constrictors were again tightened. The opening in the artery was closed with a continuous vascular silk suture, so as to cause an approximation of the intimal layers. The

From the Surgical Department of the Michael Reese Hospital.

1. Sabanejew: Zentralbl. f. Chir. **42**: 990 (Oct. 17) 1896, cited by Key, Einar: Ueber Embolectomi als Behandlungsmethode bei embolischen Zirkulationsstorungen der Extremitäten, Acta. chir. Scandinav. **54**: 339 (Jan.) 1922.

2. Labey, Georges, quoted by Mosny and Dumont: Bull. Acad. de méd. **66**: 358 (Dec. 19) 1911.

3. Key, Einar: Ein Fall operierter Emboli der Arteria femoralis, Wien. klin. Wchnschr. **26**: 936 (June 5) 1913.

4. The complete bibliography of these articles will appear in the authors' reprints.

temporary constrictors were then released, and the circulation was reestablished through the popliteal artery.

The patient left the operating room in good condition, with the leg definitely warmer and with less pain. There were frequent attacks of cramplike pain in the calf and foot muscles for several days, but at no time did the leg lose its color or become cold. The patient was up and about after several weeks, had regained sufficient strength to use crutches, and left the hospital, April 30, 1932. She remained in comparatively good health for an individual with a grave myocardial disease until several months later, when she had another cardiac decompensation, developed pneumonia and died.

CASE 2.—F. L., a woman, aged 27, was admitted to the hospital for the first time, Jan. 29, 1932, at which time she had suffered from a right hemiplegia and dysarthria. The physical examination revealed, in addition, a serious cardiac decompensation, mitral stenosis and regurgitation, and auricular fibrillation. Her condition gradually improved, and she left the hospital with a more or less compensated heart and moderate return of motor function of the right side of the body.

The second admission was on Feb. 6, 1933, in the service of Dr. Solomon Strouse. At this time there were again symptoms referable to cardiac embarrassment and abdominal complaints of attacks of pain in the upper right quadrant, with nausea and vomiting.

The patient was acutely ill, with a temperature of 100.8, respirations 28, a pulse rate of 100, and an irregular irregularity of its rhythm. The heart was enlarged to both the right and the left. Systolic and presystolic murmurs were heard at the apex. The liver was palpable three fingerbreadths below the costal arch, with local tenderness in the region of th galibladder. There was moderate paresis of the lower right extremity. The diagnosis at this time was similar to that on the previous discharge, with the additional possibility of an engrafted subacute bacterial endocarditis and gallbladder disease.

February 9, at 11:30 p. m., the patient complained of severe pain in her right arm, which soon became cold and clammy; she went into shock, and the right radial pulse could not be obtained. The blood pressure on the left arm was 100 systolic, 65 diastolic, but could not be obtained on the right arm. The oscillometric readings showed absence of oscillations in the entire right arm, while they were normally present in the left arm. The deep axillary pulse was felt in the right axillary space, but there was no palpable brachial or radial pulsation. The diagnosis of embolus to the right axillary artery was made. At operation, two hours later, a large embolus was found occluding the right axillary artery, just proximal to the circumflex humerus branch. The embolus was removed readily and the artery sutured, as described in case 1. The hand and arm immediately became warm, and the pain decreased markedly. The following night slight oscillometric readings could be demonstrated in the right arm, and there was a faint pulsation in the right radial at the wrist. On the evening of February 10 the patient complained of severe pain in both legs. The left was definitely cooler than the right. There was no cyanosis, and no oscillometric readings could be obtained from either leg. The diagnosis was made of a riding embolus at the bifurcation of the aorta with more marked interference with the left common iliac than the right, although both seemed definitely involved. Surgery seemed contraindicated because of the partial circulation and the inaccessible site of the embolus. The legs continued more or less warm, although no deep pulsations of the femoral artery could be determined. By February 12 the pulsations in the right radial practically equaled those of the left. Likewise, the oscillometric readings showed practically equal pulsation in both arms and forearms. The surface temperature and histamine test for collateral circulation (Dr. Perlow) of both arms were practically equal and normal. The same test showed that the collateral circulation of both legs and thighs was adequate, although no pulsations could be elicited in the deep vessels. February 17, at 6 a. m., after a very comfortable night, she complained of pain and pressure in her head and suddenly became unconscious and died.

Autopsy was obtained, with the following anatomic diagnosis:

Recent surgical incision of right axillary region and right axillary artery, with patent lumen and no evidence of secondary thrombus formation.
Acute verrucous endocarditis of the tricuspid valve.
Healed endocarditis of the mitral, aortic and tricuspid valves.
Stenosis of the mitral and aortic orifices and insufficiency of these valves.
Diastolic endocardial pocket, left ventricle.
Hypertrophy and dilatation of heart.
Mural thrombus in left auricle.
Embolus in aorta (iliac bifurcation) almost completetly occluding the left common iliac artery.
Multiple infarcts in kidneys.
Pulmonary emphysema.
Slight pulmonary arteriosclerosis.
Chronic passive hyperemia of lungs, liver, spleen and kidneys.
Chronic cholecystitis and cholelithiasis.
Old çaseous tuberculosis, right lower lobe.
Recent miliary tubercles of lung.

Permission was not obtained to examine the brain.

CASE 3.—R. S., a woman, aged 62, admitted to the hospital, in the service of Dr. Leon Bloch, Feb. 23, 1933, complained chiefly of recurrent attacks of severe precordial pain with a sense of constriction about the chest and feeling of impending death. The temperature was 100.4, pulse 92, and respirations 18. The patient was somewhat debilitated and appeared moderately ill and cyanotic. The heart was enlarged and the tones were distant. The blood pressure was 130 systolic, 72 diastolic. The peripheral vessels were thickened and tortuous.

She had several attacks of angina while in the hospital, and on March 1 at 5 a. m. complained of severe pain in the right arm, which soon became blanched and cold. The pulsations of the right brachial artery were readily demonstrable, but there was no radial pulsation. The oscillometric examination showed a normal response in the right arm but an entire lack of response in the right forearm. A diagnosis was made of an embolus in the right brachial artery at its bifurcation into the radial and ulnar arteries. Operation was started at 7:10 a. m., two hours and ten minutes after the onset. The right cubital fossa was infiltrated with a local anesthetic, the skin was incised and after careful dissection the lower end of the brachial artery was exposed and the embolic occlusion was encountered at the bifurcation. Very dramatically, each pulse wave coursed through the brachial artery and stopped abruptly at the site of embolic lodgment. The mouths of both the radial and ulnar arteries were filled by the embolus, which took the form of a Y. Small rubber constrictors were placed about the brachial, radial and ulnar arteries above and below the embolus. The field was kept saturated with sodium citrate solution. A longitudinal incision was made into the brachial artery and the embolus was extruded. The constrictors were removed for a short period so as to allow a free flow of blood, and then tightened again and the vessel closed by a continuous vascular silk suture. The constrictors were again released and the pulse wave immediately surged through the brachial artery down over both the ulnar and radial arteries so that the radial pulse was then easily felt. The pain immediately subsided and the arm became warm. The oscillometric examination after completion of the operation showed a normal response in the right forearm. The patient unfortunately developed a cerebral embolus, March 6, which caused a left-sided hemiplegia, and died three days later from bronchopneumonia. The right forearm remained in normal condition and would surely have recovered completely had the cerebral accident not occurred.

COMMENT

The sources of the emboli are usually cardiac in origin, arising from thrombi, either located on the valves, as in vegetative endocarditis, or as mural thrombi found in the left auricle associated with mitral stenosis or auricular fibrillation. Occasionally, atheromatous ulcerations of the aorta with local mural thrombi may give rise to emboli. Other vascular lesions and operative procedures may serve as a similar source.

The subsequent course of the embolic phenomena depends on certain underlying factors. The emboli usually lodge at the bifurcation of an artery or at the site of one of its branches. The embolus may occlude

the vessel entirely, or, as frequently occurs, the subsequent thrombus formation and vascular spasm bring about a complete cessation of the circulation through this segment of the vessel. The ultimate changes depend chiefly on the size of the artery, the completeness of the occlusion and, most important, the available collateral circulation. Gangrene is to be expected in most instances if the circulation is not reestablished.

The symptoms produced by the lodgment of the embolus are those of a sudden onset of severe pain in the extremity, associated with pallor, lowered temperature, decreased mobility, and a disappearance of the skin and tendon reflexes. The main vessel or vessels below the site of the impacted embolus show a complete absence of pulsation as demonstrated by palpation, and lack of response in the oscillometer when applied to the extremity at that point. The embolus can sometimes be felt along the course of the artery.

The direct diagnosis of peripheral embolic accidents is based on the presence of preexisting cardiovascular disease, with the onset of the foregoing symptoms, and the presence of physical manifestations already mentioned. This condition must be differentiated from venous and arterial thrombosis, Buerger's disease, intermittent claudication and Raynaud's disease. The differential diagnostic features will not be considered in this paper, as they are usually quite obvious.

The treatment should be surgical, if the main vessel involved is accessible, if seen early, especially before the onset of gangrene, and the collateral circulation seems obviously deficient to maintain life of the extremity.

Local anesthesia is the anesthetic of choice and may be used by either local or peripheral nerve block. The involved vessel is exposed in the region of the embolic occlusion and carefully separated from the surrounding tissues. Soft, small rubber constrictors are placed directly around the artery, above and below the embolus, and are gently tightened so as not to injure the vessel. A longitudinal incision is made in the artery, and the embolus removed with care. The field must be kept saturated with sodium citrate solution during the entire operative procedure. If the embolus has not been definitely located, suction may be used in the open vessel, as was found necessary in case 1. The proximal constrictor is then released, and the blood will at once flow from the artery, if the embolus has been removed. It is wise to remove only the proximal constrictor in order that any adherent clot may be washed out of the vessel and small particles not forced into the distal branches. The constrictors are again tightened and the vessel is closed with continuous vascular silk suture material, so that there is a fine line of eversion of the intima. Subsequent to this, the constrictors are finally removed, to determine the completeness of the hemostasis and the reestablishment of the circulation. The wound is then closed by layers.

PROGNOSIS

The prognosis is dependent on the interval between the onset of the attack and the time of operation. The success of this method of procedure decreases rapidly, with increasing period of time, and is usually hopeless after ten or twelve hours. Further, the subsequent course is dependent on the available collateral circulation, the myocardial reserve, and the general condition of the patient.

SUMMARY AND CONCLUSIONS

In three cases of peripheral emboli, treated by arteriotomy, the vessels involved were the popliteal, axillary and brachial. The immediate results were very satisfactory, although two of the patients later developed fatal cerebral emboli. The first patient was able to be around, lived for several months and died from a subsequent cardiac decompensation and pneumonia.

The diagnosis is usually obvious especially after a careful analysis of the early symptoms and the physical conditions and by the use of the oscillometer, which demonstrates the presence and usually localizes the site of the vascular occlusion. Various vascular diseases and local thromboses must be excluded before the best treatment for each case is decided on. Operation should be performed under local anesthesia and as early as possible. The technic described was found quite satisfactory. The surgical treatment is usually successful if the period of time between the onset and the operation is under ten hours, although this is subject to individual variations. The development of gangrene usually necessitates amputation but is frequently fatal because the patient is already in a debilitated condition and the myocardial reserve is necessarily very low.

Key concluded that: "An embolus, which causes circulatory disturbances of a threatening character in the upper or lower extremities, ought to be removed by arteriotomy unless there are contraindications. The operation should be done as soon as possible."

104 South Michigan Avenue.

Clinical Notes, Suggestions and New Instruments

DERMATO-OPHTHALMITIS DUE TO THE EYELASH DYE LASH-LURE

Clyde E. Harner, M.D., Long Beach, Calif.

Having observed the report by Greenbaum[1] of a case of dermatoconjunctivitis due to Lash-Lure, I am prompted to report three cases that I have seen. One patient was poisoned four years ago with the same dye. In addition to the three cases here reported, another case was seen several years ago in consultation, but adequate notes were not kept, or have been lost, and this case is not reported.

In only one of my cases can the condition be styled merely dermatoconjunctivitis, since the lesions involved the eyes in general, producing keratitis and uveitis, and I have classified them as dermato-ophthalmitis.

REPORT OF CASES

Case 1.—Miss E. N., aged 23, seen in 1929, had the eyelashes dyed about a week previously with Lash-Lure. The eyelids were markedly swollen, so that she could hardly open them. They were covered with many small watery blisters. There was marked chemosis of both the bulbar and palpebral conjunctivae. The corneas were difficult to see but apparently clear. The iris was normal. The pupils were small. There was marked photophobia.

Under treatment, the condition improved slowly. Ten days later a small abscess on the lid of the right eye near the inner canthus was incised. The lids were still quite thickened and the conjunctivae velvety. Vision was: right, 6/6—1; left, 6/6. Improved by lenses, it was: right, 6/4; left, 6/4—1.

The patient was next seen, April 2, 1933, after having had her eyelashes dyed at the same beauty parlor the day before. The same dye was used. Both eyes were completely swollen shut. There was marked chemosis of the conjunctivae. The corneas were clear. The iris was normal. I could not get the lids far enough apart to see the interior of the eyes. The following day they were worse, with more swelling of the lids and conjunctivae. The lower lids were pulled up under the upper lids and apparently scratching the corneas. A large

1. Greenbaum, S. S.: Dermatoconjunctivitis Due to Lash-Lure, an Eyelash and Eyebrow Dye, J. A. M. A. **101**: 363 (July 29) 1933.

amount of watery secretion, slightly filled with pus, was obtained on spreading the lids apart. The corneas of both eyes were infiltrated with a faint gray infiltration.

April 4, the patient was sent to the hospital with private nurses. They were advised to open the eyelids every few minutes to allow the escape of the irritating fluid. Other treatments were instituted, including atropinizing. After a very stormy course the patient was discharged from the hospital one week after entrance.

In the office, when examined with a slit lamp, it was seen that there was an infiltration of the superficial layers of the corneas and still some edema of the conjunctivae. At various times, abscesses on the edges of the lids appeared, and a chalazion developed necessitating opening and curettage.

The eyebrows had been treated with the dye also, and the same vesicular eruption and tremendous edema occurred in this region. The eyes did not return to normal until May 16, six weeks from the date of application of the dye. Vision at this time was: Without glasses: right, 6/5; left, 6/5—2. With correction: right, 6/4; left, 6/4—2.

During the patient's stay in the hospital a Wassermann test was made and was negative. She had a mild nephritis. The urine showed a few hyaline casts, acetone plus one, and slight reduction of sugar. The white count was 7,200, with 70 per cent polymorphonuclears.

An interesting sidelight on this case is that the patient is training herself to be a cosmetician and it has been necessary for her to discontinue using this dye on other people, since in handling it she gets an inflammation of the skin wherever it touches.

CASE 2.—Mrs. E. C., aged 42, seen, June 27, 1933, had her eyelashes and eyebrows dyed with Lash-Lure the previous day at 5 p. m. She immediately had great irritation of the eyes, which became worse until in the night the lids began to swell shut, and on this morning the right one was entirely swollen shut and the left nearly so. Lacrimation and photophobia were intense. The lids of both eyes were markedly swollen and edematous and had a crinkly red appearance. The conjunctivae were swollen and red; there was flocculent stringy material in both eyes. The corneas were clear. The pupils were normal.

The following day she was sent to the hospital. There was very little improvement from treatment, and there was some enlargement of the preauricular lymph glands. The corneas developed ulcers on the lower margins. They became more and more infiltrated. The lids, at times, were better and again worse. Sterile milk was given intramuscularly and ethylmorphine hydrochloride was used. The eyes were thoroughly atropinized. Multiple abscesses on the lid margins developed. Typhoid vaccine (50,000,000 bacilli) was given intravenously twice at two day intervals. A Wassermann test was reported four plus. A history of venereal infection twenty-six years before was obtained.

The patient was permitted to leave the hospital, July 10, two weeks after entrance. When last seen, August 11, the ulcers had entirely healed but had left fairly large leukomas, especially on the right eye. Vision was: right, 6/60; left, 6/7.50—3. Slit lamp examination of the right eye showed deposits of pigment on the anterior surface of the lens and also some on the posterior corneal endothelium. There was a small posterior synechia. There was no deposit on the lens of the left eye. The fundi of both eyes were apparently normal.

CASE 3.—Mrs. H. E., aged 28, seen, July 29, 1933, had her eyelashes dyed with Lash-Lure three days before. The following morning she had marked inflammation, the eyes being swollen shut. She was under the care of a general physician until referred to me. The lids of both eyes were swollen. There was maceration of the integument of the lids. The corneas were clear. The iris was normal. The conjunctivae were markedly injected. There were marked lacrimation and photophobia. Under treatment the patient improved rapidly and from a telephone conversation with her I learned that the eyes were quite normal within a week.

COMMENT

One is impressed that there is a distinct allergic factor in the production of this condition. Patient 1 had two distinct severe reactions four years apart. Also, she develops a localized dermatitis when using the dye on other patrons of a beauty parlor in which she is employed.

Patient 2, although having a definite syphilitic infection, which may or may not have accentuated the severity of the symptoms, on close questioning admitted that she frequently had "eczemas" and skin irritations from the use of various cold creams and other cosmetics.

314 Security Building.

SEVERE EYE SYMPTOMS DUE TO DYEING THE EYELASHES

OLIVER P. BOURBON, M.D., LOS ANGELES

As dyeing the eyelashes is a new fad of beauty parlor patrons, I am reporting this case for the purpose of calling attention to its dangerous possibilities. I have seen but one similar report.[1]

The dye used in this case has for its trade mark "Larieuse," is called "Godefroy's French Coloring for Hair and Beard," and is manufactured by the Godefroy Manufacturing Company, St. Louis. The statement is made on the container that it is "compounded according to the French formula." It is also stated that "the dye is somewhat perishable and must be consumed within fifteen months from the date stamped below," the expiration date for this particular bottle being May 15, 1933. The dye was used in this case on July 8, 1933, almost two months after the expiration date which the manufacturers had marked on the bottle; but whether the age of the dye had anything to do with the ill effects produced is a matter of conjecture.

REPORT OF CASE

Miss D. P. consulted me, July 9, complaining that her eyes were much swollen, with aching and burning and some thick discharge but no severe pain. She had her eyelashes dyed early in the afternoon of the day before. She stated that the beauty parlor operator let some of the dye get into her eyes and that soon after returning home and within two or three hours after the treatment her eyes became swollen, red and watery.

Examination showed a marked edema of the lids of both eyes, the edema extending downward into the cheeks. There was much chemosis of the conjunctiva, with a severe congestion and considerable stringy secretion. The cornea of each eye was clear. The edema, chemosis and congestion were of such a degree that the patient could barely find her way about. While no history of former attacks was given, she was exceedingly nervous and the possibility of a severe angioneurotic edema was considered. An ointment of phenacaine with epinephrine was prescribed and directions were given for applying hot moist compresses to the eyes.

The next day the right eye was better, but the left eye was much more edematous and the compresses were changed to ice cold moist compresses of a magnesium sulphate solution. Gradual improvement continued for one week, when the patient returned with a severe exacerbation. The eye lids were now so edematous that it was impossible for her to open her eyes. The lids had to be forcibly separated in order to remove the stringy secretion. Hot compresses of a magnesium sulphate solution and 0.5 per cent zinc sulphate ointment were prescribed.

Recovery was uneventful, the edema and secretion gradually growing less, the congestion of the conjunctiva being the last to disappear. The patient was dismissed, August 4.

COMMENT

The profuse stringy secretion was evidently due to an excessive mucoid secretion caused by the chemosis and irritation of the conjunctiva and was not due to infection.

Allergic sensitiveness, the chemical irritation and toxic effect of the dye, and angioneurotic edema were all considered.

The severe edema and chemosis that appeared so shortly after the dye was used was strongly suggestive of an allergic sensitiveness to the dye.

The prolonged period of the attack, the severity of the congestion, the gradual subsidence of the edema and chemosis and the fact that the congestive symptoms were the last to disappear

1. Greenbaum, S. S.: Dermatoconjunctivitis Due to Lash-Lure, an Eyelash and Eyebrow Dye, J. A. M. A. **101**: 363 (July 29) 1933.

would indicate that while an allergic sensitiveness to the dye was a possible causative factor it was not the only cause of the severe reaction.

The picture as a whole strongly indicated a combined chemical irritant and the absorption of material that had a pronounced local toxic effect.

520 West Seventh Street.

EYELASH DYE (LASH-LURE) DERMATITIS WITH CONJUNCTIVITIS

R. C. JAMIESON, M.D., DETROIT

The report by Greenbaum [1] of a case of dermatitis and conjunctivitis due to eyelash dye has prompted the addition of this case to those on record in which eyelash dye (in this case also Lash-Lure) was the excitant.

The use of dyes on eyelids and eyebrows would seem to the public a simple and harmless procedure, but to the dermatologist even the most trifling and apparently innocuous agents must be considered as a possible cause in searching for the etiology in mild chronic cases of dermatitis about the eyes, face and neck in women. These cases are encountered more and more frequently, and each new cosmetic added to the already long list adds one more possible exciting agent.

In Bab's [2] recent article he mentions a number of cosmetics and dyes used on eyelashes, eyebrows or skin which are known to produce dermatitis and even conjunctivitis. Henna also, which is frequently used to dye the eyebrows and eyelashes, was the causative agent in six cases reported by him.

The case reported here, of a woman, aged 40, was similar in most respects to those already reported. Five days before examination by an ophthalmologist, eyelash dye (Lash-Lure) had been applied. No preceding sensitization test had been made. Three days after the application, the eyelids became red, swollen and irritated. With the usual bland applications she improved during the next two weeks, but at the end of that time the eyelids and adjacent skin areas again developed an acute inflammation accompanied by conjunctivitis. The entire clinical picture at that time was one of dermatitis venenata, invading the eyelids, forehead, cheeks and conjunctivae. Sensitization tests proved negative to everything except Lash-Lure.

During the next two months the course of the condition was that of acute dermatitis with conjunctivitis, improving and recurring at intervals, with no other possible source of irritation except the original excitant. Persistent protection of the skin and the application of bland and soothing preparations finally succeeded in establishing a cure.

This case appears to have been unusually severe and the protracted course (three months) would indicate that all cases of this type are possibly serious, considering the long incapacitation and the possibility of corneal ulcer or other ophthalmic complications.

1309 David Whitney Building.

CORNEAL ULCERATION FOLLOWING USE OF LASH-LURE

A. W. McCALLY, M.D.; A. G. FARMER, M.D., AND E. C. LOOMIS, M.D.
DAYTON, OHIO

There has been much agitation recently against the unbridled use of harmful cosmetics, and many case reports have appeared demonstrating some of the consequences of this practice.

We report a case in which a woman had her eyebrows and eyelashes dyed with a preparation called Lash-Lure, a product manufactured in Los Angeles by the Lash-Lure Research Laboratory, Inc. As the ingredients of the cosmetic were unknown and could not be learned from the local beautician who applied it, an analysis was made by a competent chemist. He qualified his report by stating that the dye was one of the paraphenylenediamine group. No neutralizing antidote was known and no report of similar cases could be found in the literature as a guide to treatment at the time the patient came under observation. Since then a report of a somewhat similar case, though apparently without such extensive involvement, has been made by Greenbaum.[1] Another material difference between Dr. Greenbaum's case and the one now reported lay in the time of development of symptoms, being twelve days in his case and immediate and severe in the one now under discussion.

1. Greenbaum, S. S.: Dermatoconjunctivitis Due to Lash-Lure, an Eyelash and Eyebrow Dye, J. A. M. A. **101**: 363 (July 29) 1933.
2. Bab, W.: Dermat. Wchnschr. **59**: 1041 (July 7) 1933.

REPORT OF CASE

A woman, aged 38, seen on the morning of May 18, 1933, stated that on the afternoon of May 17 she visited a local beauty parlor, where her eyebrows and eyelashes were "touched up." A certain soap, dye and other applications were used. Instead of a minor treatment, as she had expected, she was amazed to find it quite an elaborate procedure accompanied by smarting and irritation of the eyes. She had never had a previous application of dyes of any kind, though she had occasionally visited the beauty parlor for other cosmetic treatments. Her eyes smarted and pained severely on her way home. Within two hours the lids were completely swollen shut and she was unable to open them. The eyes became very red, accompanied by profuse lacrimation and photophobia. The pain increased, accompanied by a severe aching, more marked in the right eye. Her nose felt "stuffy and runny," with symptoms of a cold. The skin of her face and brow felt greatly irritated. There was no history of previous eye trouble of any kind, and no allergic history except that she had always had a "tender skin."

On her arrival home she flushed her eyes with boric acid solution several times and instilled 10 per cent solution of mild silver protein and ointment of yellow mercuric oxide. She had a bad night and her eyes were worse the next morning.

When the patient was first seen the morning after the application of the dye, there was a beginning edematous dermatitis of the face and forehead, marked edema of the lids, marked chemosis with folds of conjunctiva protruding between the lid margins, and severe conjunctival and ciliary congestion. The pupils were small and only slightly active to light, and the iris markings were somewhat blurred, the iris appearing edematous. There were two areas on the left cornea which showed denudation of the superficial layers, while the right was stippled over its entire area. The fundi appeared normal through the somewhat hazy media. Vision was blurred, more so in the right eye, though objects could be distinguished. The temperature was normal. Treatment was entirely symptomatic, consisting of flushings with boric acid solution, cold applications, butyn drops and holocaine ointment for pain, acetylsalicylic acid for headache, and emulsion synephrine tartrate solution for the edema of the nasal mucous membranes.

The beautician, on being informed of the case, visited the patient and applied milk compresses to the face and lids.

May 19, the chemosis had markedly subsided but otherwise the condition had progressed unfavorably. The skin condition had become worse and was very irritating. The ocular congestion had not subsided except for the chemosis; posterior deposits were present on Descemet's membrane, both corneas were more hazy, pain was more marked in the right eye, vision was much impaired, and both globes were tender to palpation. Tension was not increased. The discharge had changed to a stringy exudate. An attempt to dilate the pupil was made at this time with homatropine and atropine. It was found that, with difficulty, only incomplete dilatation could be obtained, and there was a tendency to contract quickly. The fundi could not be seen. Irrigations, butyn and compresses were the only measures affording relief, butyn affording complete relief of the pain in the eyes for varying periods. Rest could not be obtained by the usual sedatives. A dermatologist was called to care for the skin condition. Lassar's paste and starch compresses were prescribed with some symptomatic relief. Conditions remained about the same on the 20th. The patient was hospitalized on the 21st in order to secure full nursing care. The pupils were fairly well dilated at this time. In the evening the pain became more severe, requiring frequent instillations of butyn. The pupils again became small, both corneas very hazy and vision practically absent except for light perception. The anterior chambers were of average depth. Tension was difficult to estimate because of the edema present, but it seemed slightly increased.

May 22, the pain was still severe, particularly in the left eye, whereas the right had previously been the more painful. Ten-

1. Greenbaum, S. S.: Dermatoconjunctivitis Due to Lash-Lure, an Eyelash and Eyebrow Dye, J. A. M. A. **101**: 363 (July 29) 1933.

sion still seemed increased on palpation and paracentesis was considered. McLean tonometer readings, however, were normal in both eyes. Fifty per cent dextrose was given intravenously and eye medication was restricted to sterile olive oil and atropine. This, however, was not well borne. Pain could not be relieved by codeine or morphine, the latter exciting the patient, and return to butyn was necessary. It was thought that the frequent use of butyn might be aggravating the ocular condition. Butyn and atropine ointment were used. Filaments appeared on the left cornea and there was a marked lessening of pain. That night the patient rested for five hours, the best relief she had had since the onset of her trouble. On the 23d, a large central ulcer appeared on each cornea. The ulcers were touched with tincture of iodine, and metaphen 1:5,000 was used. These were improved the next morning but on the evening of the 24th there were two more small ulcers on the right cornea below and one appearing on the left. These were curetted lightly and touched with tincture of iodine. Cultures showed Staphylococcus citreus. The following day the patient was resting better and had slept fairly well with chloral hydrate by rectum. The ulcer margins, however, seemed to be extending and it was decided to cauterize these with the actual cautery. On the 26th there were two more small new ulcers on the right cornea and one more on the left. All of these smaller fresh ulcers were thoroughly cauterized on this day. It was found that their bases were deeply situated. The large central ulcers were clean and apparently healing. They were not cauterized but their edges were threaded with silver nitrate, 1 per cent, to stimulate them. From this time there was a slow but steady improvement. The edema of the lids subsided considerably but their margins remained somewhat reddened. Ammoniated mercury ointment, 3 per cent, was applied to this region for a few days with some improvement. Vision was reduced to light perception because of the impaired media but the pain was very much less. The patient was, however, extremely nervous and restless and, though many sedatives were used, none were successful in procuring rest, which amounted to from fifteen minutes to two hours a night, accompanied by hallucinations. June 1, a suppurating chalazion was incised and drained and on that date she was moved from the hospital to bed rest at home.

The ulcers improved slowly with occasional applications of tincture of iodine, instillations of metaphen, 1:5,000, solution, atropine, and the use of hot applications. Later mercurochrome paste and trichloracetic acid were occasionally applied. June 4, they were treated with the actual cautery.

June 5, a generalized bright red papular dermatitis began to appear on the body. This was thought to be due to atropine. Homatropine, supposedly less toxic, was substituted, as scopolamine was feared in this case and it was thought advisable to continue a mydriatic. The skin condition all the way through had been a major problem and no effective remedy had been found. The appearance of this new rash was very annoying.

The patient, however, seemed to be making some progress until June 10, when she began to develop severe pain lasting for an hour or so each morning about 5 o'clock and not relieved by butyn. The tension in both eyes began to increase and the ulcers, which had been improving, began to retrogress, the edges and bases becoming necrotic. June 14, a bilateral paracentesis was done with a keratome in both lower corneal segments. Relief of the severe pain was obtained to a considerable degree, but the corneal ulcers were not influenced, though both wounds were kept open for several days. The right cornea was apparently becoming necrotic, though the left seemed to be improving slightly. June 18, a second paracentesis was done on the left cornea, which had closed. On the 20th there was a partial slough of the right cornea, involving all but a zone about the limbus and extending to the deeper layers. This was followed by a staphyloma and a dense opacity with vascularization. Tension subsided in the right eye but persisted in the left, although the wound was kept open as long as possible. June 25, a third paracentesis was done on the left eye. This also failed to improve the condition of the left cornea, which sloughed like the right but over a smaller area.

The skin condition improved markedly about June 18, when potassium permanganate solution, 1:5,000, in the form of compresses on the face and affected portions of the body was begun. All eye medication was stopped at the same time except for irrigations with physiologic solution of sodium chloride or potassium permanganate, 1:5,000, solution. Owing, however, to the increase of ocular pain, the eye medication was resumed and consisted of homatropine and butyn. Skin patch tests were made with atropine, butyn and metaphen, but all were negative. Hordeola and furuncles played an annoying part in the case after several weeks. Foreign protein was used in courses throughout the acute illness. Routine urinalyses and blood examinations, including Wassermann and Kahn tests, were negative except for an occasional trace of albumin, a few pus cells, and slight lowering of hemoglobin and the red cell count.

The most marked feature in the pathologic changes in this case was the intense edema of all structures, particularly of the cornea, ciliary muscle and iris. This apparently interfered markedly with normal circulation. There was simply a disintegration of the corneal stroma. Hypopyon, ordinarily seen in the presence of such marked corneal changes due to bacterial invasion, was absent.

At the present time the patient is in good physical condition, the skin is clear and the eyes are quiet, though there is still slight ciliary congestion. The right cornea has a large dense opacity, which will permanently obstruct vision; the left has a less dense opacity in the lower half and enough infiltration above to restrict vision to light perception, as in the right eye. We are, however, still hoping for enough clearing of the left cornea to permit some vision, perhaps with the aid of an optical iridectomy. The patient has displayed wonderful fortitude and is in remarkably good spirits. She is entering into a number of her usual social and household activities and is now considering the braille system. She is especially interested in doing all in her power to stop the use of harmful cosmetics and in preventing similar and other injuries happening to other women from the same cause.

Fidelity Medical Building.

Council on Pharmacy and Chemistry

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

REPORTS OF THE COUNCIL

CALUMBA-AGAR AND RHEUM-AGAR (REINSCHILD CHEMICAL CO.) NOT ACCEPTABLE FOR N. N. R.

Calumba-Agar and Rheum-Agar, stated to be agar "impregnated" respectively with fluid extract of Calumba, N. F., and fluidextract of Rheum, U. S. P., were presented for consideration of the Council by Reinschild Chemical Company, New Rochelle, N. Y.

On the label of Calumba-Agar occurs the statement "Each teaspoonful represents 2 C. C. (M 32) Fluidextractum Calumbae N. F." On the label of Rheum-Agar occurs the statement "Each teaspoonful (weighing only 1 gram) represents 1 C. C. (M 16) fluid extractum rhei U. S. P." In the information submitted to the Council no evidence was given that these products contained the claimed amounts of calumba and of rheum. In the case of Calumba-Agar the product was stated to be prepared by "impregnating . . . 1000 Gm. of agar with 2000 cc. of Calumba, U. S. P., VIII . . ."; in the case of Rheum-Agar the product was stated to be prepared by "impregnating . . . 1000 Gm. of agar with 1000 cc. of Fluid Extract of Rheum, U. S. P. . . ." Combinations of agar with other substances are hardly justified unless the administration of the combination possesses some distinct advantage over that of the separate ingredients. The Council's referee reported that he knew of no special advantage in administering rhubarb or calumba with agar, yet he was inclined to recommend that these products be accepted since he could find no serious objection to their use. Being skeptical as to the accuracy of the quoted statements from the label, the referee recommended that Calumba-Agar and Rheum-Agar be accepted provided: (*a*) that the firm could submit satisfactory evidence

that each of these contains the full amount of active ingredient stated on the label; (*b*) that no special claims be made for the therapeutic value of either combination—in other words, that no special claim for either should be made because it is administered with agar, and that the claims for Calumba-Agar and Rheum-Agar do not exceed those allowable for calumba and for rhubarb, and (*c*) that the advertising be revised to omit reference to unaccepted articles. The Council adopted the referee's recommendation.

When informed of the action of the Council concerning these two preparations, the Reinschild Chemical Company wrote that it had submitted the method of manufacture from simple standard U. S. P. and N. F. preparations; that these are so simple as to be considered prima facie evidence as to their composition, and that the Council has facilities for determining their potency and is at liberty to do so. As has been stated repeatedly, the burden of proof lies on the manufacturer.

It is not the business of the Council to test every preparation that is submitted to it. The Reinschild Chemical Company has not submitted satisfactory evidence that Calumba-Agar and Rheum-Agar contain the full amounts of active ingredients stated on the labels nor met the other conditions for acceptance of the products; the Council, therefore, declared these preparations unacceptable for New and Nonofficial Remedies.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

DEAN'S EVAPORATED MILK—VITAMIN D ADDED (ADDED VITAMIN D CONCENTRATE PREPARED FROM COD LIVER OIL)—150 STEENBOCK VITAMIN D UNITS PER 14.5 OZ.

Manufacturer.—Dean Milk Company, Chicago.

Description.—Evaporated milk, the same as Dean's Quality Evaporated Milk (THE JOURNAL, Aug. 6, 1932, p. 477) with 150 Steenbock Vitamin D units (vitamin D concentrate prepared from cod liver oil) per 14½ ounces.

Preparation.—A definite quantity of cod liver oil concentrate (Vitex, National Oil Products Company) in vegetable oil solution, is introduced into the evaporated milk as it leaves the evaporating pans. The mixture is homogenized, cooled, thoroughly agitated and canned by the usual procedure.

Vitamins.—The vitamin D concentrate and the vitamin D fortified milk are regularly tested biologically.

Claims of Manufacturer.—For general cooking, baking and table uses and for infant feeding. The mixture of equal parts of the evaporated milk and water is not below the legal standard for whole milk. The curds formed in the stomach are smaller, softer and more readily digestible than those from raw or pasteurized milk.

KING ARTHUR FLOUR. NEVER BLEACHED

Manufacturer.—Sands, Taylor & Wood Co., Boston.

Description.—A spring wheat "short patent" flour; not bleached.

Manufacture.—Selected spring wheat is cleaned, scoured and milled, and chosen flour streams are blended by essentially the same procedure as described in THE JOURNAL, June 18, 1932, page 2210.

Claims of Manufacturer.—Never bleached.

BEECH-NUT STRAINED CARROTS
(SLIGHTLY SEASONED WITH SALT)

Manufacturer.—Beech-Nut Packing Company, Canajoharie, N. Y.

Description.—Sieved carrots retaining in high degree the natural vitamin and mineral values; seasoned with salt.

Manufacture.—The carrots are washed, and are scraped and trimmed by hand; are sliced, weighed into steam-jacketed, glass-lined kettles containing mechanical agitators, with a minimum amount of water, and 0.5 per cent by weight (of the carrots and water) of salt is added. The air is exhausted, the carrots are steam-cooked until soft, then passed through two enclosed monel strainers containing an atmosphere of steam. Coarse material is discarded. The strained material, in "vacuum" in glass-lined kettles, is brought to the desired consistency, is flowed to holding tanks, heated to 70 C. and automatically sealed in jars in "vacuum," which are heated to 115 C. for one hour and cooled.

Analysis (submitted by manufacturer).—

	per cent
Moisture	91.7
Total solids	8.3
Ash	0.9
Salt (NaCl)	0.5
Fat (ether extract)	0.2
Protein (N × 6.25)	0.4
Crude fiber	0.9
Carbohydrates other than crude fiber (by difference)	5.9

Calories.—0.3 per gram; 9 per ounce.

Vitamins.—The method of preparation efficiently protects the natural vitamin values.

Claims of Manufacturer.—Especially intended for infants, children and convalescents and for special smooth diets. Only warming is required for serving. The natural mineral and vitamin values are efficiently retained.

INSTANT POSTUM

Manufacturer.—Postum Company, Inc., New York.

Description.—Dried water extract of a blend of roasted wheat bran, whole wheat, molasses and malted wheat flour.

Manufacture.—The bran, malted wheat flour and molasses are roasted in a coffee roaster; the wheat is separately roasted; the two roasts are blended in proper proportions. The blended cereals are extracted with hot water; the extract is clarified by centrifugating, evaporated to dryness in "vacuum," crushed and automatically packed.

Analysis (submitted by manufacturer).—

	per cent
Moisture	2.8
Ash	8.3
Fat (ether extraction method)	0.0
Protein (N × 6.25)	6.6
Crude fiber	0.0
Carbohydrates (by difference)	82.3
Calcium (Ca)	0.15
Phosphorus (P)	0.86

Calories.—3.6 per gram; 102 per ounce.

Claims of Manufacturer.—For the preparation of table beverage with water or milk; instantly miscible. Contains no stimulating ingredient.

McCORMICK'S BEE BRAND NUTMEG
McCORMICK'S BEE BRAND SELECT WHOLE NUTMEGS

Manufacturer.—McCormick and Company, Inc., Baltimore.

Description.—Whole and ground nutmeg (dried seed of Myristica fragrans Houtt, deprived of its testa). The whole nutmeg is coated with lime.

Manufacture.—The nutmeg or ripe seed of an evergreen tree cultivated in Singapore, Penang, Sumatra, Java and the West Indies is collected after falling to the ground. The husk and mace are removed; the nutmeg in the shell is dried on mats in the sun or with fire heat for from eight to ten days. The shells are broken and removed; the kernels or seeds are dipped in milk of lime for protection against insect attack. They are

assorted according to size, exported and packed whole or ground in cartons or tins at the packing plant.

Analysis (submitted by manufacturer).—

	per cent
Moisture	8.3
Total ash	2.1
Acid insoluble ash	0.04
Volatile ether extract	5.2
Nonvolatile ether extract	36.6
Protein (N × 6.25)	6.7
Starch	19.7
Crude fiber	2.8
Carbohydrates other than crude fiber (by difference)	38.3

Claims of Manufacturer.—Conforms to the respective United States Department of Agriculture standards.

(a) DAY STAR BEST PATENT FLOUR (BLEACHED)
(b) I. H. BEST PATENT FLOUR (BLEACHED)
(c) SPLIT SILK BEST FLOUR (BLEACHED)
(d) THUNDERBOLT HARD WHEAT FLOUR (BLEACHED)

Manufacturer.—The Ismert-Hincke Milling Company, Kansas City, Mo.

Description.—(*a*) and (*b*) Hard winter wheat patent flour; bleached.

(*c*) Hard winter wheat "standard patent" flour; bleached.

(*d*) Hard winter wheat "straight" flour; bleached.

Manufacture.—Selected wheat is cleaned, washed, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, p. 2210. Chosen flour streams for the patent flours and all the flour streams for the straight flour are blended and bleached with nitrogen trichloride (1/14 ounce per 196 pounds) and with a mixture of benzoyl peroxide and calcium phosphate (5/15 ounce per 196 pounds).

Claims of Manufacturer.—For bread baking

VITAMIN D FORTIFIED PASTEURIZED MILK (150 VITAMIN D UNITS PER QUART) ADVERTISING OF SANITARY FARM DAIRIES, INC.

Distributor.—Sanitary Farm Dairies, Inc., St. Paul.

Description.—Advertising for bottled pasteurized grade A cow's milk fortified with vitamin D (vitamin D concentrate prepared from cod liver oil); contains 150 Steenbock vitamin D units per quart.

Preparation.—The milk complies with the analytic and bacteriologic requirements specified by the laws of the state of Minnesota and the city of St. Paul and other municipalities in which it is distributed.

See this section for Vitamin D Fortified Pasteurized Milk of W. J. Kennedy Dairy Company, Detroit, for description of fortification with vitamin D (THE JOURNAL, July 1, 1933, p. 34). The milk is pasteurized by the holding method (61 C. for thirty-two minutes) and immediately cooled to 4 C. and automatically bottled. The bottles are cleaned with 100 parts of chlorine per million parts of water, which is forced into the bottles by pressure pump; the bottles are allowed to drain in an inverted position. The bottles are closed with a seal cap and a hood cap held in place by wire.

Analysis (submitted by manufacturer).—

	per cent
Moisture	87.2
Total solids	12.8
Ash	0.7
Fat	4.0
Protein (N × 6.38)	3.2
Lactose (by difference)	4.0

Calories.—0.7 per gram; 20 per ounce.

Vitamins.—The vitamin D concentrate used in the preparation of this vitamin D milk and the fortified milk are regularly tested biologically, at a biologic laboratory approved by the Department of Agriculture of the state of Minnesota. Clinical investigation shows this vitamin D fortified milk to be a reliable antirachitic agent.

Claims of Manufacturer.—A vitamin D fortified, antirachitic pasteurized milk having the natural flavor and food values of standard pasteurized milk. One quart is equivalent in vitamin D content to 2½ teaspoonfuls of good grade cod liver oil (60 Steenbock vitamin D units per teaspoonful).

STOKELY'S FINEST PEAS AND CARROTS

Manufacturer.—Stokely Brothers and Company, Inc., Louisville, Ky.

Description.—Cooked, fresh, diced carrots and peas.

Manufacture.—The cooked carrots (washed, peeled, assorted and diced) and the peas (prepared essentially by the same procedure as described for Stokely's Lima Beans (THE JOURNAL, Oct. 7, 1933, p. 1155), are admixed in definite proportions by machine just before the blanching operation. The mixture is filled into cans, covered with brine, sealed, processed for a definite period at 115 C., and immediately cooled.

Analysis (submitted by manufacturer).—

	per cent
Moisture	88.7
Total solids	11.3
Ash	1.3
Sodium chloride (NaCl)	0.8
Fat (ether extract)	0.1
Protein (N × 6.25)	2.3
Crude fiber	1.2
Carbohydrates other than crude fiber (by difference)	6.4

Calories.—0.4 per gram; 11 per ounce.

Vitamins.—The method of preparation is considered efficient for protecting the natural vitamin content.

Claims of Manufacturer.—Packed in enamel lined cans within a few hours after picking. Natural mineral and vitamin values are retained in high degree.

CLAPP'S ORIGINAL BEEF BROTH (SEASONED WITH SALT)

Manufacturer.—Harold H. Clapp, Inc., Rochester, N. Y.

Description.—Cooked beef broth containing salt for seasoning.

Manufacture.—Government inspected and passed beef is cooked at 100 C. for five hours in a dilute salt solution. The beef broth formed is allowed to stand over night, is strained through gauze, and is automatically packed and sealed under vacuum in glass jars, which are processed at 116 C. for one hour.

Analysis (submitted by manufacturer).—

	per cent
Moisture	97.7
Total solids	2.3
Ash	1.1
Sodium chloride (NaCl)	1.0
Fat (ether extract)	0.0
Protein (N X 6.25)	1.0
Crude fiber	0.0
Carbohydrates (by difference)	0.2

Calories.—0.05 per gram; 1 per ounce.

Claims of Manufacturer.—Specially designed for infant and invalid feeding.

(a) GILSTER'S BEST FLOUR (PHOSPHATE ADDED) (BLEACHED)
(b) GILSTER'S FEATHERLITE PLAIN FLOUR (PHOSPHATE ADDED) (BLEACHED)
(c) GILSTER'S MOTHER'S JOY PLAIN FLOUR (PHOSPHATE ADDED) (BLEACHED)

Manufacturer.—Gilster Milling Company. Mill: Steeleville, Ill. Office: Chester, Ill.

Description.—(*a*) Bleached soft winter wheat "short patent" flour containing 0.5 per cent added calcium acid phosphate.

(*b*) and (*c*) Bleached soft winter wheat "long patent" flour containing approximately 0.5 per cent added calcium acid phosphate.

Manufacture.—Selected soft winter wheat is cleaned, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, p. 2210. Chosen flour streams are blended, bleached with a mixture of calcium phosphate and benzoyl peroxide, and with chlorine, and admixed with 0.5 per cent by weight of calcium acid phosphate.

Claims of Manufacturer.—For biscuit, cake and pastry baking.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 11, 1933

IRRADIATED ERGOSTEROL, VITAMIN D AND TOXISTEROL

The discovery that irradiation of many food materials with ultraviolet rays would induce antirachitic properties in these foods paved the way for a line of research that has proved extremely promising for the ultimate chemical characterization of vitamin D. When it was found that the curative potency resided in the unsaponifiable fraction of irradiated oils, attention was naturally directed to cholesterol. However, it was soon shown that a contaminant was responsible for the photochemical activation of supposedly pure cholesterol and that this substance was ergosterol. In the early enthusiasm over this observation, irradiated ergosterol was hailed as the antirachitic factor itself or at least as the provitamin D. This material was early shown to possess extraordinary therapeutic action in the prevention and cure of rickets; later it was also found to be toxic if used in very large doses.

Certain changes of a chemical and physical nature take place when ergosterol is exposed to light of short wavelength: the irradiated product has a different melting point, solubility and optical rotation, and the absorption spectrum shows a marked transformation accompanied at the extreme by the loss of all antirachitic potency. It appears that the photochemical change has produced a series of products. In the course of one of the successful efforts to crystallize vitamin D, Windaus and his co-workers at Göttingen have obtained a series of isomers of ergosterol; viz., lumisterol, vitamin D, and suprasterol I and II. Subsequently, Windaus, von Werder and Lüttringhaus [1] demonstrated still another product, tachysterol, in the mixture of irradiation products of ergosterol. It does not possess antirachitic activity until irradiated further; but, in contrast to the other nonpotent components of the irradiation mixture, it is definitely toxic.

A recent report by Laquer and Linsert [2] describes the isolation of still another product from the mixture of isomers produced by irradiating ergosterol, to which they give the name toxisterol. This is produced by further irradiation of vitamin D and possesses far more marked toxic properties. Whereas 0.025 microgram of vitamin D will initiate healing in the rachitic bone, as much as 5 micrograms of toxisterol is required. The maximum absorption by toxisterol occurs at about 250 millimicrons and, since ergosterol, after being irradiated until no antirachitic activity remains, also shows this point of maximum absorption, it appears likely that the newly discovered sterol may constitute a large part of the product of extreme irradiation of ergosterol.

The difficulty of making clean-cut chemical separations of the isomers of the sterols is well recognized. It is more than likely, therefore, that the antirachitic property of toxisterol is due to contamination with vitamin D. It is certain that, if the early observations on the toxicity of toxisterol are substantiated, there is at hand an explanation for the untoward effects produced by supertherapeutic doses of irradiated ergosterol. Indeed, Laquer and Linsert point out the advisability of making therapeutic preparations in the future from crystalline vitamin D rather than from irradiated ergosterol, in order to avoid the toxic effects of certain of its isomers which are inevitably produced in the photochemical process.

1. Windhaus, A.; von Werder, F., and Lüttringhaus, A.: Ann. d. Chem. **499**: 188, 1932.
2. Laquer, F., and Linsert, O.: Klin. Wchnschr. **12**: 753 (May 13) 1933.

THE CENTENARY OF THE DISCOVERY OF DIASTASE

The present year represents the centenary of the discovery of diastase, an incident of great importance for the biologic sciences and not without considerable significance for medicine. In 1830, Dubrunfaut prepared an extract of malt that converted starch into sugar just as since early in the nineteenth century strong acids were known to do. His paper was really the first account of the action of an enzyme in solution.[1] Three years later, in 1833, Payen and Persoz [2] precipitated by alcohol from such extracts a substance that could be dried and preserved and that had a powerful action on starch. This they called "diastase." The term has continued in use in France almost to the present time as synonymous for the substances more commonly designated today as enzymes. Of course, the production of sugar in the process of malting was known before 1833; but the modern scientific history of enzymes and their action really commences with the researches of Payen and Persoz on diastase.

Today, at a time when enzymes seem to be recognized to a greater extent than ever before as possible potent agents in the biologic process of disease as well as of health, it may seem worth while to recall a few of the steps that have led to the current interest in those

1. Some account of the fundamental facts here referred to will be found in Bayliss, W. M.: The Nature of Enzyme Action, London, Longmans, Green & Co., 1911.
2. Payen and Persoz: Mémoire sur la diastase, et les principaux produits de ses réactions, Ann. de chimie et de physique **53**: 73, 1933.

unusual specific biochemical catalysts that are termed enzymes. In the early period, as the number of recognized diastase-like products grew, they were designated in general as "ferments" on account of similarities in their activities to those of alcoholic fermentation. Presently substances of the diastase type were distinguished as "soluble" or "unorganized" ferments in contradistinction to living organisms, like yeast, to which the name "organized ferments" was then applied. The inevitable confusion led the Heidelberg physiologist Kühne in 1878 to suggest a new name. The publication in which this first occurred is so rare, and so few students have actually read it, that we venture to repeat the interesting passage, in translation:

> The latter designation [i. e., formed and unformed ferments] has not gained general acceptance, in that on the one hand it was objected that chemical bodies such as ptyalin and pepsin could not be called ferments, since the name was already given to yeast cells and other *organisms* (Brücke); while on the other hand it was said that yeast cells could not be called *ferments*, because then all organisms, including man, would have to be so designated (Hoppe-Seyler). Without stopping to inquire further why the name excited so much opposition, I have taken the opportunity to suggest a new one, and I give the name *enzymes* to some of the better known substances, called by many "unformed ferments." This is not intended to imply any particular hypothesis, but it merely states that ἐν ζύμῃ (in yeast) something occurs that exerts this or that activity, which is considered to belong to the class called fermentative. The name is not, however, intended to be limited to the invertin of yeast, but it *is* intended to imply that more complex organisms, from which the enzymes, pepsin, trypsin, etc., can be obtained, are not so fundamentally different from the unicellular organisms as some people would have us believe.[3]

Thus by definition enzymes have become the catalysts produced by living organisms. The controversy as to whether an essential difference existed between organized and unorganized ferments was settled by Buchner in 1897. He proved that by the application of great pressure to ground up yeast it was possible to express a liquid that contained no cells but possessed all the fermentative properties of the original yeast. Since that time, by similar means, many of the "ferments" have been extracted from living cells, and it has been amply demonstrated that, although these ferments are produced by the living cells, once they have been produced life itself is unnecessary for their actions. Cameron[4] has further pointed out that all these compounds are therefore of one class and may be called ferments or enzymes. Neither term is satisfactory. Most of them do not produce an effervescence resembling boiling, and the vast majority of them do not occur in yeast. They produce catalytic actions, and therefore they may be more correctly termed biochemical catalysts or biocatalysts. In any event, an enzyme, ferment or biochemical catalyst is a catalyst produced by a living cell but whose action is independent of the living cell that produces it. Payen and Persoz could scarcely have imagined that within a century hundreds of volumes would be devoted to the category of substances of which their newly described diastase was the first more clearly defined representative.

3. Kühne, W.: Erfahrungen und Bemerkungen ueber Enzyme und Fermente, Unters. a. d. physiol. Inst. d. Univ. Heidelberg **1**: 291-326, 1878.

4. Cameron, A. T.: A Textbook of Biochemistry, New York, Macmillan Company, 1933.

OHIO AGAIN ACTS TO AID ITS HOSPITALS

The increasing toll of motor vehicle accidents continues to place an unwarranted burden on hospitals. As previously mentioned in these columns,[1] hospitals receive compensation for only a small portion of the expense they incur in caring for patients who have been injured in accidents from this cause. These are not patients of the hospitals' choosing. If an injured person is brought to a hospital, the institution has no alternative but to accept him, regardless of how great an expense may be incurred in treating him or of how unlikely it may be that the patient or any other person will pay the costs of the required service. With the considerable losses of income from private patients and from endowment investments which most hospitals have suffered in the last few years, this burden of serving without adequate remuneration the casuals of motor transportation has been the more keenly felt.

Some attempts have been made in several states to remedy this situation. It was thought that the Massachusetts law compelling all owners of motor vehicles to carry liability insurance might greatly relieve the hospitals of that commonwealth, but such has not been the case. The legislatures of several other states, following the leadership of New Jersey, have enacted lien laws which provide the machinery by means of which physicians, nurses and hospitals may secure payment of their legitimate charges for services rendered patients for injuries caused by the fault or negligence of other persons. These lien laws are good as far as they go, but at best their operation is cumbersome, and, as far as motor vehicle accidents are concerned, they leave uncovered all those cases in which responsibility for the accident cannot be placed on the owner of the car, who is assumed by the patient to be responsible for the accident. Accidents in which responsibility cannot be fixed form no small percentage of all those with which hospitals have to deal.

The Ohio Hospital Association deserves great praise for its efforts exerted over several years to secure the enactment of a law framed in an attempt to solve this problem. That organization already had to its credit a law which has been in effect for several years, which provides adequate compensation for the hospital care of workmen injured in industrial accidents. As a result, the hospitals of Ohio are assured remuneration in such cases, equaling or closely approximating their costs. Using some features of this law as a pattern, the Ohio general assembly at its last session passed an act to "provide reimbursement for hospitals on account of

1. Caring for the Victims of Automobile Accidents, editorial, J. A. M. A. **99**: 1178 (Oct. 1) 1932.

expenses for the care of indigent persons injured in motor vehicle accidents. . . ."

The main purposes of the law are, in effect, as follows: Indigent patients are defined as those persons who have suffered motor vehicle injuries and are unable to pay in part or in full for the hospital service they obtained in relation to such injuries. Hospitals to comply under the act must be organized and operated not for profit. The per diem cost for caring for patients is that determined by the Industrial Accident Commission and used as a basis of compensating them for the care of the victims of industrial accidents. The fund that is established to meet these hospital costs is derived from the annual license tax assessed against the owners of all motor vehicles registered in the state. The law was passed in June, 1933, and is to be in full force and effect until March 1, 1935.

The effect of this legislation is that hospitals may secure from state funds remuneration for the care of all victims of motor accidents who are unable to pay for the hospital care they receive or for whose injured condition no other person who can pay is responsible. Under its provisions, however, a hospital is left with the problem of collecting, if it can, in those cases in which responsibility for a motor accident lies with a vehicle owner who is financially able to pay the hospital or who has insurance protection. In case settlement is made with the injured person by the car owner or his insurance carrier, this law provides the hospital no redress. But it goes a long way toward taking the burden of caring for poor persons who have been injured in motor vehicle accidents off the shoulders of hospitals, where it does not belong, and placing it on the broad back of the whole group of motor vehicle owners.

Current Comment

WHAT PRICE EYES?

On other pages of this issue are reported six more cases of serious injury, one of them involving loss of sight, suffered by women who permitted beauty parlors to dye their eyelashes. In five of the six cases reported in this issue the serious effects were due to a product called "Lash-Lure." The Bureau of Investigation Department of THE JOURNAL published on September 23, this year, reports of seven additional cases, and the bureau now has in its files reports of four more. In other words, there have been sixteen cases of severe untoward effects reported following the use of a single product, Lash-Lure. This preparation is an aniline dye having for its base probably either paraphenylenediamine or paratoluylenediamine or some closely related substance. Every physician, and practically every responsible beauty parlor, knows the risk that is run in the application of dyes of the aniline type to the hair of the scalp. It has long been good beauty parlor practice to insist that persons who are to be subjected to an aniline hair dye should be tested for sensitivity to that product. Because of the irritating effects of such dyes, there is no justification for the use of so dangerous a substance around the delicate tissues of the eye. As THE JOURNAL has pointed out repeatedly, cosmetics are under no national control. The National Food and Drugs Act defines a drug as a substance that is used for the prevention, mitigation or cure of disease, so that no matter how powerful, how poisonous or how deadly the drugs may be that enter into certain cosmetics, they are not drugs within the meaning of the act. As a result, the cosmetic industry is as free from legal restrictions of a national character in 1933 as the "patent medicine" industry was in 1905. Incidentally, it speaks well for the high character of the cosmetic industry generally in the United States that there is not more fraud connected with the business than there is. The Lash-Lure tragedies emphasize the need of some sort of national control over the sale of cosmetics.

THE EXCRETION OF SALICYLIC ACID

Although salicylic acid, employed in the form of salicylates, has long enjoyed an extensive use in clinical medicine, its fate in the body has not been completely explained. Unlike some of the simpler organic acids, such as citric acid, malic acid and the fatty acids, salicylic acid is not burned up in the body. Much of the compound finds its way unchanged out of the organism by way of the kidneys. In part the ingested salicylic acid is subject to the apparent detoxicating mechanisms of the body, which are manifold.[1] Besides destruction by oxidation there may result several types of conjugation to render a somewhat toxic substance less harmful. Hydroxy compounds, either aliphatic or aromatic, are usually detoxicated by conjugation with sulphuric acid and excreted as ethereal sulphate; or, in case the supply of sulphuric acid is insufficient, glycuronic acid may take the place of the sulphate. Sherwin[2] has raised the question anew as to whether sulphuric acid conjugation or glycuronic acid conjugation enjoys predominance. Glutamine has been found as a detoxicating agent in man. Perhaps the most familiar mechanism is that by which the familiar amino acid glycine (glycocoll) is combined with benzoic acid to form the less offensive urinary constituent hippuric acid. Long ago it was reported that intake of salicylic acid is followed by the formation and excretion of a compound consisting of glycine and salicylic acid. It was named salicyluric acid in 1856 by Bertagnini[3] because of its analogy to hippuric acid. Some investigators in more recent times have failed to find salicyluric acid and have therefore questioned its occurrence in human urine. According to the latest studies of Quick[4] at the Fifth Avenue Hospital in New York, the human organism can synthesize salicyluric acid but the amount excreted is rather small. Quick believes that its importance has been overemphasized. He asserts that, contrary to the statement found in some

1. Sherwin, C. P.: Physiol. Rev. **2**: 238 (April) 1922.
2. Ambrose, A. M., and Sherwin, C. P.: Detoxication Mechanisms, Ann. Rev. Biochem. **2**: 377, 1933.
3. Bertagnini, C.: Ann. Chem. **97**: 248, 1856.
4. Quick, A. J.: J. Biol. Chem. **101**: 475 (July) 1933.

of the textbooks on pharmacology, the excretion of salicylic acid is not rapid. For example, whereas the excretion of hippuric acid following an intake of 2 Gm. of benzoic acid is complete in four hours, the elimination of salicylic acid is only 50 per cent complete in twenty-four hours. The rate of salicylic acid excretion is dependent on the concentration of the drug in the body. With increasing doses of salicylic acid, the excretion of the free acid becomes definitely greater, while the output of salicyluric acid is only slightly affected. The stimulatory effect of salicylic acid on uric acid excretion appears, according to Quick, to depend on a fixed concentration of the drug in the body. Below this crucial concentration no effect is observed. The action of salicylic acid on uric acid elimination is strikingly augmented by glycine or foods such as gelatin that are rich in glycine.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Tuesday and Thursday mornings from 8:55 to 9 o'clock, central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

November 14. White Flour and Bleached Flour.
November 16. Oyster Season Here Again.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

November 18. Itching.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

University News.—Dr. Luther L. Hill, Montgomery, gave the annual address commemorating the seventy-ninth birthday of William Crawford Gorgas before the Lafayette Guild Chapter of the Gorgas Medical Society, University of Alabama, October 3; his subject was "Medical History."

Society News.—Dr. Charles O. King, Birmingham, addressed the Walker County Medical Society, September 8, on diagnosis of skin diseases of interest to the general practitioner.——Dr. Duane M. Carr, Ann Arbor, Mich., addressed physicians of the Tennessee Valley in Decatur, September 26, on "Surgery of the Chest."

ARKANSAS

New Government Hospital at Hot Springs.—The new Army-Navy General Hospital, erected by the government in Hot Springs National Park at a cost of $1,500,000, was opened to patients, September 20. The hospital, said to be the tallest building in Arkansas, will have a capacity of 412 beds as compared with 270 in the old hospital which it replaces. It is V-shaped with wings consisting of six floors and a heliotherapy deck, while the central structure at the wing junction is twelve stories in front and six in the rear. On the first floor are the bath house with thirty immersion baths, three hydrotherapeutic showers and a hydrotherapeutic pool for paralytic patients, administrative offices, wards for women and children and isolation and detention wards. The second floor contains dental offices with x-ray apparatus and laboratory, electrocardiograph, two large wards and twelve private and semiprivate wards. Facilities for the eye, ear, nose and throat and medical service with two typical wards and the main kitchen, food preparation and refrigeration rooms are on the third floor. Wards are on the fourth floor, and the genito-urinary service, hospital laboratory and two typical wards on the fifth floor. On the sixth floor, center, is the surgical service including orthopedic surgery and two large heliotherapy decks, while the seventh floor tower contains an x-ray clinic with two radiography rooms and one room each for fluoroscopy, roentgen therapy, film storage, dark room and viewing room. The physical therapy department is also on this floor. The eighth tower floor has private and semiprivate wards. Mineral water is supplied to drinking fountains on each floor of the building and to all bath equipment. The structure is of reinforced concrete,

New government hospital at Hot Springs

veneered with a light color face brick, trimmed with limestone and terra cotta, and embellished with ornamental aluminum and bronze. The Army-Navy General Hospital was established in 1883.

CALIFORNIA

Changes in Health Officers.—Dr. Samuel G. Arnold has been named health officer of Long Beach, succeeding Dr. Grundy E. McDonald. The Kern County Health Department, of which Dr. Joseph K. Smith, Bakersfield, is the health officer, has taken over the health work of the city of Tehachapi. Dr. Rupert G. Doupe was formerly city health officer. Dr. Frank G. Crandall, district health officer of Whittier district, Los Angeles County, has been transferred to Santa Monica in a similar capacity. His new territory includes Santa Monica, Culver City, West Hollywood and the mountainous districts to the north.

Alumni Day.—The University of California Medical School, San Francisco, will observe its semiannual alumni day, November 24. In addition to operative clinics, ward rounds and demonstrations the following papers will be presented:

Drs. James F. Rinehart and Stacy R. Mettier, Studies on the Etiology of Rheumatic Fever.
Dr. William J. Kerr, Etiology of the Common Cold.
Dr. William C. Deamer, Interesting Studies on Allergy.
Chauncey D. Leake, Ph.D., Development of Ideal Anesthesia.
Dr. John Homer Woolsey, What a Medical Center Can Mean to the Man in Practice.

The annual Alpha Omega Alpha Lecture will also be given.

CONNECTICUT

Dr. McCollum to Lecture on Nutrition.—Elmer V. McCollum, Ph.D., professor of biochemistry since 1917, Johns Hopkins University School of Hygiene and Public Health, Baltimore, will address a public meeting, November 16, in the Colonial Room of the Horace Bushness Memorial, Hartford. The title of the lecture, offered under the auspices of the Connecticut Dairy and Food Council, will be "Present Trends in Nutrition."

GEORGIA

The Most Prevalent Diseases.—Twenty-two per cent of the total number of cases in a group of twelve of the most prevalent diseases reported by physicians from their private patients were attributed to syphilis and gonorrhea in Georgia in 1932. There was a total of 23,347 cases of venereal disease when the number of clinic patients (13,848) was added to the number reported by physicians (9,499). Influenza led the list of the twelve most prevalent diseases in this group with a total of 15,685; syphilis was second, with 6,776. Others in order

were: pneumonia, 4,252; malaria, 3,411; tuberculosis, 3,321; gonorrhea, 2,723; typhoid, 1,799; diphtheria, 1,362; whooping cough, 1,085; measles, 1,075; pellagra, 986, and scarlet fever, 802. The total number of cases in this classification was 43,277.

District Meetings.—The Eighth District Medical Society was addressed at Valdosta, October 10, among others, by Drs. George E. Atwood, Jr., Waycross, on "Laboratory and X-Ray Findings in Bronchospirochetosis"; Alton M. Johnson, Valdosta, "Vomiting in Infancy"; George F. Eubanks, Jr., Atlanta, proctologic problems; Charles H. Richardson, Jr., Macon, diagnosis and management of diseases of the biliary tract, and Kenneth J. McCullough, Waycross, management of pelvic inflammatory disease.——At a recent meeting of the Seventh District Medical Society in Cartersville, speakers included Drs. John L. Chandler, Rome, on "Importance of Early and Regular Examinations of the Pregnant Woman"; Zebulon V. Johnston, Calhoun, "Diseases of the Uterus with Special Reference to Malignancies"; William H. Lewis, Rome, "Significance of Pelvic Pain," and August F. Routledge, Rome, "Observations in the Treatment of Gonorrhea."——Speakers before the Ninth District Medical Society at a meeting near Jasper, recently, included Drs. Grady N. Coker, Canton, and Daniel C. Elkin, Atlanta, on "Rare Findings in the Surgical Abdomen" and "Treatment of Aneurysm," respectively. Dr. Clarence L. Ayers, Toccoa, president-elect of the society, also spoke.

ILLINOIS

Typhoid Outbreak at Bluffs.—One death and ten cases of typhoid were recently reported in Bluffs, a town of about 1,000 inhabitants. A preliminary investigation indicated that a milk supply was responsible but the observation of food and milk handlers is being maintained in an effort to determine definitely the source of the outbreak. Eight of the nine blood specimens examined proved positive for typhoid.

Society News.—Dr. John J. McShane, Springfield, spoke before the Christian County Medical Society in Taylorville, October 23, on epidemic encephalitis and other contagious diseases of the nervous system.——Speakers before the Ogle County Medical Society at Rochelle, October 26, included Drs. Charles D. Center, president-elect of the Illinois State Medical Society, and Thomas B. Knox, sixth district councilor, both of Quincy, on "The Need of Cohesion" and "Medical Care of the Unemployed," respectively.——Dr. Nathan S. Davis III, Chicago, discussed "Hypertension—Coronary Disease" before the Peoria City Medical Society, November 7.

Chicago

Personal.—Dr. Elwood W. Mason has been named instructor in medicine in the division of biological sciences, University of Chicago.——Dr. Benjamin Goldberg, associate professor in medicine, University of Illinois College of Medicine, was given an honorary professorship in the National University of Mexico, October 30.

Program on Encephalitis.—The recent outbreak of encephalitis in St. Louis will be discussed at a meeting of the Chicago Medical Society, November 22. The speakers will be Drs. Hugh S. Cumming, surgeon general, U. S. Public Health Service, Washington, D. C.; Theodore C. Hempelmann, associate professor of clinical pediatrics, Washington University School of Medicine, St. Louis, and Noel Paul Hudson, professor of hygiene and bacteriology, University of Chicago.

Patients Wanted for Massive Radium Treatment of Tumors.—The tumor clinic of Michael Reese Hospital is conducting a clinical investigation on massive radium therapy of a special group of neoplasms and will accept free of charge a limited group of indigent patients suffering from these conditions. The tumors under investigation are cancer of the tonsil, pharynx, larynx and prostate, also benign prostatic hypertrophy occurring in patients in whom operation is contraindicated. It is essential that these patients should not have received any previous radiation treatment. It is requested that the referring physician submit data concerning a case before sending the patient.

INDIANA

State Medical Election.—Dr. Walter J. Leach, New Albany, was named president-elect of the Indiana State Medical Association at its recent annual meeting in French Lick, to take office in 1935. Dr. Everett E. Padgett, Indianapolis, will assume the presidency of the association in January, 1934. Indianapolis was selected as the place for the next annual session.

Immunization Campaign.—Two committees have been appointed to take charge of a campaign for immunization against diphtheria and smallpox, to be launched by the state advisory health council. Stanley Coulter, Sc.D., Lafayette, is chairman of one committee to prepare a bulletin on child nutrition and to encourage nutrition work in the public schools, and Dr. Thurman B. Rice, Indianapolis, chairman of the committee to plan the campaign.

KANSAS

Personal.—Dr. Frank Lightfoot has been appointed health officer of Great Bend, succeeding the late Dr. Addison Kendall.——Dr. Schubert D. Henry resigned as director of public health of Kansas City, effective August 1, and has been succeeded on a part time basis by Dr. Henry W. Kassel.

Society News.—Dr. William W. Duke, Kansas City, Mo., addressed the Shawnee County Medical Society in Topeka, October 2, on "The Dawn of a Specialty in Medicine: Allergy and Physical Allergy." Dr. Rolla B. Stafford, Salina, discussed medical practice in the Virgin Islands before the society, September 5.——Dr. George B. Morrison, Wichita, addressed the Ford County Medical Society, September 8, on transurethral prostatectomy.——At a meeting of the Lyon County Medical Society, September 5, Dr. John B. Brickell, Emporia, among others, spoke on "Surgical Treatment of Pulmonary Tuberculosis."——Dr. John W. Amesse, Denver, addressed the Sedgwick County Medical Society, Wichita, October 6, on "Newer Conceptions of Childhood Tuberculosis." Drs. Erastus E. Edgerton and Howard C. Curtis, both of Wichita, spoke before the society, October 17, on "Clinical and Surgical Aspects of Biliary Tract Disease" and "Mental Conditions Following Brain Injuries," respectively.——Dr. Lewis D. Johnson, Chanute, discussed pyelitis before the Labette County Medical Society, September 27.

MASSACHUSETTS

Personal.—Dr. George H. Bigelow, former state health commissioner, and his successor, Dr. Henry D. Chadwick, were honored by the Massachusetts Tuberculosis League with a dinner in Boston, October 26. Dr. Bigelow is now director of the Massachusetts General Hospital, succeeding Dr. Frederic A. Washburn. Dr. Chadwick was formerly controller of the tuberculosis division of the Detroit Health Department.——Dr. Hans Zinsser, professor of bacteriology and immunology, Harvard University Medical School, Boston, was given an honorary degree by Lehigh University, Bethlehem, Pa., during its celebration of Founder's Day, October 4. Dr. Zinsser delivered the principal address of the occasion.

Dr. Mohr Gives Dunham Lectures.—Dr. Otto Louis Mohr, professor of medicine, Royal Frederiks University, Oslo, Norway, will deliver three lectures under the Edward K. Dunham Lectureship for the Promotion of the Medical Sciences on "Genetics and Pathology," at Harvard Medical School. The individual titles of the lectures will be:

November 20: Basic Conceptions. Mechanism of Heredity and Sex Determination. Inheritance of Pathologic States in Man. Hereditary Factors in Pathology.
November 22: Origin of Injurious Hereditary Factors by Mutation. Their Action as Revealed by Illustrative Cases in Human Pathology. Lethal Factors. Pathology of Twins.
November 24: Intersexuality. X-rays and Heredity. Alcohol and Heredity. The Tumor Problem. Intermarriage and Crossing. Some Bearings of Genetics on Medical Practice.

Surgical Meeting.—The annual meeting of the New England Surgical Society was held at Boston, September 29-30. The following program was presented:

Dr. Horace K. Sowles, Carcinoma of the Small Intestine.
Dr. Frank H. Lahey, Operative Management of Cancer of the Rectum.
Drs. Robert B. Greenough, Grantley W. Taylor, Charles E. Dumas, Cancer of the Breast: End-Results; Massachusetts General Hospital, 1921-1922-1923.
Drs. Taylor, Channing C. Simmons, Richard H. Wallace, Cancer of the Breast: End-Results; Massachusetts General Hospital, 1924-1925-1926.
Drs. John Homans and George M. Hass, Regional Ileitis: A Clinical, Not a Pathological, Entity.
Dr. Leland S. McKittrick, Abdominal Symptoms With or Without Abdominal Lesions in Diabetic Acidosis.
Dr. James Raglan Miller, Hartford, Conn., Spontaneous Rupture of the Stomach During Labor.
Dr. Donald Munro, Diagnosis and Treatment of Acute Subdural Hematoma: A Report of Thirty-Four Cases.
Dr. Frederic Jay Cotton, Giant Cell Tumors of Bone.
Dr. Ernest M. Daland, A Study of 236 Compound Fractures Treated at the Massachusetts General Hospital.
Drs. William J. Mixter and Joseph Barr, Rupture of the Intervertebral Disk.
Dr. Daniel C. Patterson, Bridgeport, Conn., Appendices Epiploicae.
Dr. Robert C. Cochrane, Suppurative Thyroiditis.

Dr. Lyman Allen, Burlington, Vermont, delivered his presidential address at the annual dinner at Harvard Medical School,

on "The Early Medical History of Vermont." Officers elected include Drs. Frederick B. Sweet, Springfield, president; Channing C. Simmons, Boston, vice president, and John M. Birnie, Springfield, secretary.

MICHIGAN

Personal.—Dr. Henry S. K. Willis has been named superintendent of the William H. Maybury Sanatorium at Northville, succeeding Dr. Bruce H. Douglas, who has become controller of the tuberculosis division of the Detroit Health Department.

Dr. Armstrong Honored. — Dr. Oscar S. Armstrong, Detroit, was guest of honor at a luncheon, October 17, given by the Business Pioneers Association of Detroit. Dr. Armstrong, president of the Wayne County Medical Society in 1892-1893, is the oldest physician in point of continuous active practice in Detroit, according to *Detroit Medical News*.

Memorial Meeting to Dr. Davidson.—The surgical section of the Wayne County Medical Society held a memorial meeting in honor of the late Dr. Edward C. Davidson, October 23. Dr. Roy D. McClure opened the session with a talk on "An Inspiration from His Life and Work." Other speakers were Drs. Plinn F. Morse on "The Pathology of Burns," and Grover C. Penberthy, "Surgical Management of Burns."

Society News.—Speakers before the Berrien-Cass County Medical Society at Benton Harbor, October 23, included Drs. Osborne A. Brines and Ralph L. Fisher, Detroit, on "Rôle of Hemorrhage in Sudden Death" and "Coronary Thrombosis," respectively.——Dr. William R. Clinton, Detroit, read a paper on "Diagnosis and Treatment of Liver Abscesses" before the Jackson County Medical Society, October 3.——The first meeting of the year of the Michigan Pathological Society at Eloise, October 14, was devoted to a discussion of ovarian tumor.——Dr. James Milton Robb, Detroit, addressed the Monroe County Medical Society in Monroe, October 25, on medical economics.——Dr. William M. Donald spoke on diabetes before the East Side Physicians' Association, October 26.——At a meeting of the Detroit Oto-Laryngological Society, October 18, Dr. William Mithoefer, Cincinnati, discussed "Nasal Accessory Sinus Problems."

MINNESOTA

Mrs. Mellish Wilson Dies.—Mrs. Maude Mellish Wilson, for many years editor for the Mayo Clinic and author of a textbook on medical writing, died at the Mayo Clinic, Monday, November 6, after a long illness.

MISSOURI

Phonetic Laboratory.—A phonetic clinical laboratory has been installed at the Central Institute for the Deaf, St. Louis, where persons with defective speech and hearing may see a graph of the sound vibrations of their speech and compare it with pictures of normal vibrations. The institute has an enrolment of sixty-nine children in the grade school, sixty-seven children and adults in the speech correction department and thirty-eight adults in the lip-reading classes.

Society News.—A symposium on deafness constituted the meeting of the St. Louis Medical Society, October 24, with Dr. Eugene T. Senseney, Cordia C. Bunch, Ph.D., Dorothy Wolff, Ph.D., and Dr. Louis K. Guggenheim as speakers. The clinical manifestations of encephalitis were discussed by Drs. Joseph F. Bredeck, Goronwy O. Broun, George Ives and James F. McFadden before the society, October 17.——A joint meeting of the Jackson and Wyandotte (Kan.) county medical societies was addressed, November 14, by Dr. Carl F. Nelson, Lawrence, Kan., on "Metabolism of Malignant Tumors."

NEW HAMPSHIRE

Personal.—Dr. John P. Bowler, Hanover, was elected president of the Association of Resident and Former Resident Physicians of the Mayo Clinic and Mayo Foundation at the annual meeting in Rochester, Minn., October 7.

NEW YORK

Veteran Practitioners Honored. — The Orleans County Medical Association gave a dinner at Knowlesville recently in honor of four of its members who have practiced for more than fifty years: Drs. Fremont W. Scott, Medina; Charles E. Fairman, Lyndonville; Richard W. Bamber, Waterport, and John E. Sutton, Albion. Dr. Fairman, who has practiced fifty-six years, is said to be the oldest physician in point of service in the county. Dr. Scott was unable to attend the dinner on account of ill health.

Society News.—The program of the Nassau County Medical Society, October 24, in Mineola, was devoted to discussion of peptic ulcer by Lester J. Schultz, Ph.D., New York, whose subject was "A Practical Intravenous Method for Treatment of Peptic Ulcer," and Drs. Louis A. Van Kleeck, and Harold A. Butman, Manhasset, "Peptic Ulcer—A New Intravenous Therapeutic Agent for Its Treatment."——The sixth district branch of the Medical Society of the State of New York held its annual meeting in Norwich, October 18. Guest speakers were Drs. Floyd E. Keene, Philadelphia, on "Radium Therapy in the Treatment of Uterine Myoma"; Edward M. Livingston, New York, "Aids to Precision in Diagnosis: A Practical Study of Abdominal Pain, Rigidity and Tenderness"; Frederic E. Elliott, Brooklyn, "The New Economic Philosophy Applied to Medicine," and Arthur W. Booth, Elmira, "Practical Points in Proctology."

New York City

Personal.—Prof. Otto H. Warburg, director of the Kaiser Wilhelm Institute for Cell Physiology, Berlin-Dahlem, and winner of the Nobel prize in medicine in 1931, delivered an address on physiology at Columbia University College of Physicians and Surgeons, October 23.——Dr. Karl Landsteiner of Rockefeller Institute for Medical Research has been elected an honorary fellow of the Royal Society of Medicine, London.

Cornerstone for Department of Health Building. — A seven ton cornerstone for the new building of the departments of health, sanitation and hospitals was laid, October 30. Dr. James Alexander Miller presided. The laying of the cornerstone marked resumption of work on the building, which was begun late in 1931 (THE JOURNAL, Jan. 2, 1932, p. 56). It will be ten stories high and will cover the entire block bounded by Worth, Centre, Lafayette and Leonard streets.

NORTH DAKOTA

Society News.—Dr. John McEachern, Winnipeg, Manit., Canada, addressed the Grand Forks District Medical Society, recently, at Grafton, on cardiology.——The North Dakota Academy of Ophthalmology and Otolaryngology held its fall meeting jointly with the South Dakota Academy at the Mayo Clinic, Rochester, Minn., with addresses and demonstrations by members of the clinic staff as features of the meeting.

OHIO

Personal. — Francis L. Landacre, Ph.D., for many years chairman of the department of anatomy at Ohio State University College of Medicine, Columbus, died, August 23.——Dr. Henry J. John, Cleveland, has been named head of a newly created department of metabolic diseases at St. Luke's Hospital, Cleveland, newspapers report. Fourteen rooms have been provided for the study of patients by the department, which will for the present devote itself to diabetes and obesity.

Institute on Vascular Disease.—Drs. Carl J. Wiggers and Roy W. Scott, Cleveland, and Géza de Takáts, Chicago, presented a symposium on peripheral vascular disease at the meeting of the Cincinnati Academy of Medicine, November 6. Dr. Wiggers discussed control of the circulation in the small vessels; Dr. Scott, clinical aspects due to changes in the blood vessels, and Dr. de Takáts, diagnosis and management. Dr. Walter M. Simpson, Dayton, led the discussion. In connection with this meeting the Heart Council of Greater Cincinnati and the department of medicine, University of Cincinnati College of Medicine, joined the academy in presenting an institute on cardiovascular disease at the Cincinnati General Hospital during the day.

PENNSYLVANIA

Hospital News.—Dr. Cyrus C. Sturgis, professor of internal medicine, University of Michigan Medical School, Ann Arbor, will deliver an address at the Western Pennsylvania Hospital, Pittsburgh, November 14, on "Anemias—Classification and Treatment." The occasion will inaugurate the celebration of an annual "West Penn Day," to which the board of directors invites the medical profession.

Assemblies for Practitioners.—For the second year a series of special assemblies for practicing physicians will be held at George F. Geisinger Memorial Hospital, Danville, during the winter. The first meeting was held, October 26, with Dr. John A. Kolmer, Philadelphia, as guest lecturer. Dr. Kolmer presented two addresses, on "Present Status of Biologic Therapy in the Prophylaxis and Treatment of Diseases" and "Methods of Evaluating Compounds Employed in the Treatment of Syphilis and the Amount of Treatment to Be Given," respectively.

Philadelphia

Division of Anesthesia.—The medical board of the Philadelphia General Hospital has established a division of anesthesia in the department of surgery, with Dr. Henry S. Ruth as chief. This move was made "to turn this art back to the medical profession," according to a statement issued by the board. Only physicians will be trained in the specialty.

Annual Dinner.—The forty-seventh annual dinner of the Association of Ex-Resident and Resident Physicians of the Philadelphia General Hospital will be held Tuesday, December 5, at the Philadelphia Country Club, Bala, Pa., with Dr. David Riesman as guest of honor. Ex-residents are requested to send their correct addresses to the secretary, Dr. George Wilson, 133 South Thirty-Sixth Street, Philadelphia.

Society News.—George W. Raiziss, Ph.D., among others, addressed the College of Physicians of Philadelphia, November 1, on "Experimental Chemotherapy and the Destruction of Spirochaeta Pallida in the Brain."——At a meeting of the Obstetrical Society of Philadelphia, November 2, speakers were Drs. Julia Faith Skinner Fetterman, on "Malignancy in Cervical Polyps"; Robert A. Kimbrough, Jr., "Value of Hormonal Study in the Diagnosis of Chorionepithelioma" and Thaddeus L. Montgomery, "Premature Separation of the Placenta with Special Attention to the Placental Lesions."——Drs. Bernard P. Widmann and Herman W. Ostrum addressed the Philadelphia Roentgen Ray Society, November 2, on "Evaluation of the Roentgen Diagnosis of Aneurysms."——The Philadelphia County Medical Society observed Pennsylvania Health Day, November 8, with the following program of addresses: Drs. James M. Anders, "Some Reasons Why the Layman Fails to Preserve His Health"; Charles W. Burr, "Prevention of Mental Disease," and John A. Kolmer, "Infections of the Respiratory Tract with Special Reference to Prevention." Dr. Howard W. Haggard, New Haven, Conn., was to address a special meeting, October 30, according to the *Weekly Roster and Medical Digest,* to present "an ethical, practical plan, favorably considered by the Medical Economics Commission, to combat the quackery that is eating into your income and to increase the income of every ethical M.D." The scientific meeting of the society, October 14, was devoted to discussion of diseases of the colon, presented by Drs. Martin E. Rehfuss, on functional disorders; Harry Shay and Jacob Gershon-Cohen, organic colitides, and Damon B. Pfeiffer, neoplasms.

UTAH

Society News.—Drs. Edward S. Pomeroy and Oza J. LaBarge presented papers before the Salt Lake County Medical Society, October 9, on "Relation of Prostatic Infection to Prostatic Hypertrophy" and "History of Medicine and the Allied Sciences Among the Saracens," respectively. Dr. John Ruhräh, professor of pediatrics, University of Maryland School of Medicine, Baltimore, addressed the society at a special meeting, September 28, on infantile paralysis.

WISCONSIN

Personal.—Dr. Walter W. Peck, Darlington, recently celebrated the completion of his fiftieth year in the practice of medicine.——Dr. Robert S. Vivian has been appointed health officer of Beloit to succeed Dr. Harry O. Delaney.

Society News.—A symposium on x-ray films of the chest was presented at a combined meeting of the Outagamie and Waupaca county medical societies, October 17, by Drs. Silvanus A. Morton and Arthur A. Pleyte, Milwaukee; Charles D. Boyd, Kaukauna, and Earle F. McGrath, Appleton.——Dr. Frank Gregory Connell, Oshkosh, addressed the Winnebago County Medical Society, Oshkosh, September 15, on peptic ulcer.——Drs. William S. Middleton, Madison, and Theodore L. Squier, Milwaukee, addressed the Medical Society of Milwaukee County, October 13, on "Manifestations and Recognition of Allergic Diseases" and "Treatment of Lobar Pneumonia," respectively, and Mr. George G. Goetz, "Medical Relations with Insurance Companies."——Drs. Francis B. McMahon and Eben J. Carey addressed the Milwaukee Academy of Medicine, October 17, on "Carcinoma of the Lip" and "A Century of Progress in Medicine," respectively.——Medical societies of Racine, Kenosha and Walworth counties held their annual joint meeting in Kenosha, October 4. Speakers were Drs. Stanley J. Seeger, Milwaukee, on "Modern Treatment of Burns"; Clifford G. Grulee, Chicago, "Interesting Conditions of the New-Born," and Harry E. Mock, Chicago, "Multiple Injuries with Skull Fractures." Following the dinner, Mr. J. George Crownhart, Madison, secretary of the Wisconsin State Medical Society, among others, gave an address on "The Economic Status of Medicine in Wisconsin."

GENERAL

Radio Advisory Board to Byrd Expedition.—A radio consulting medical advisory board to give the second antarctic expedition of Admiral Richard E. Byrd a consultation service in case of emergency has been formed. The board has representatives in the East and Middle West and on the Pacific Coast so that some member may be reached at any hour of day or night.

News of Epidemics.—Thirty-two cases of smallpox were reported in Oshkosh, Wis., October 19.——Schools and theaters of Windsor, Vt., were closed, October 16, after an outbreak of five cases of infantile paralysis, with two deaths.——The health officer of Okmulgee County, Okla., reported 113 cases of diphtheria in the county, October 18. Typhoid was also said to be prevalent.

Fifth Annual Goiter Award.—The American Association for the Study of Goiter announces for the fifth year its offer of a prize of $300 for the best essay based on original research work on any phase of goiter. Competing manuscripts must be in English and must be submitted to the corresponding secretary, Dr. Julius R. Yung, 670 Cherry Street, Terre Haute, Ind., not later than April 1, 1934. The award will be made at the annual meeting of the association in Cleveland, June 7-9, 1934. It is hoped that the offer will stimulate research, especially on the basic cause of goiter.

Society News.—Dr. Charles H. Mayo, Rochester, Minn., was chosen president-elect of the Interstate Post-Graduate Medical Association of North America at the annual meeting in Cleveland, October 16-21. Dr. John M. T. Finney, Baltimore, became president.——Dr. Ross V. Patterson, Philadelphia, was elected president of the Association of American Medical Colleges at the annual meeting in Rochester and Minneapolis, Minn., October 30-November 1. Dr. Charles W. Poynter, Omaha, was elected vice president and Dr. Fred C. Zapffe, Chicago, reelected secretary. Nashville was selected as the place for the meeting in October, 1934.

Annual Tuberculosis Seal Sale.—The National Tuberculosis Association announces its twenty-seventh annual sale of Christmas seals. Funds derived from the seal sale support the activities of more than 2,000 state and local antituberculosis associations throughout the country. In spite of the past four years of depression the death rate from tuberculosis has continued to decline, but health officials are pointing out that this is probably the result of momentum gained in better times and that a rise may be expected when the full effects of reduced standards of living are felt. Many sanatoriums have continued to operate through the loyalty of their staffs and low costs, but sooner or later many will have to close their doors, the association asserts, unless help is given.

Change in Status of Licensure.—The Alabama State Board of Medical Examiners reports the following action:

Dr. James F. Davis, Akron, license revoked for one year, August 19, for the excessive use of alcohol coupled with morphine addiction.

Dr. Julius G. Henry, Akron, license revoked for one year, August 19, for the excessive use of alcohol.

The Georgia State Board of Medical Examiners reports the following action:

Dr. Charles Verstandig, Atlanta, license revoked and declared void, October 12. Dr. Verstandig had been allowed to take the board examination under a misapprehension of facts, since the board was under the impression that he was a graduate of a class A medical college.

The Massachusetts Board of Registration in Medicine reports the following action:

Dr. Dwight F. Willis, Boston, license suspended, September 28, because of his conviction in court for conspiracy to perform an illegal operation. Dr. Willis is at present serving a six months' sentence in Suffolk County House of Correction.

Annual Report of Rockefeller Foundation.—After ten years of concentration on aid for building and endowment of certain medical schools, the Rockefeller Foundation has shifted its emphasis to support of specific research projects, according to the annual report for 1932. Of $3,090,973 appropriated for the medical sciences during the year, the largest amount, $1,282,652, was given to McGill University, Montreal, for the establishment of a neurologic institute. Further attention was paid to the field of neurology by various small appropriations to institutions in Germany, Switzerland and London. Other

problems in medical research which received support during the year were studies of physiology of the acoustic nerve, whooping cough and virus diseases, biologic research with radium and problems of sex. Funds were provided for 383 fellowships for workers in medical science. The foundation expended $2,539,057.15 in 1932 for public health work, in which the principal aim was to correlate studies of a disease in its environment with investigations in the laboratory. An extensive program for control of yellow fever was carried on in cooperation with the government of Brazil, including support for a laboratory in Bahia, in addition to support of laboratory research at Lagos, Nigeria, and in New York. Studies were carried on in various parts of the world on malaria, hookworm, tuberculosis, yaws, undulant fever, the common cold, schistosomiasis and typhoid. In addition, the foundation contributed toward development of health services in forty-three foreign countries, gave assistance to the central health administrations of eleven states and to local health work of 164 counties in twenty-two states in the United States and, finally, provided 225 international fellowships in public health. The entire amount appropriated for the year was $11,577,064, other fields covered being social and natural sciences and the humanities.

Southern Medical Association Meeting.—The twenty-seventh annual meeting of the Southern Medical Association will be held in Richmond, Va., November 14-17, under the presidency of Dr. Irvin Abell, Louisville, Ky. General clinical sessions will be held the first two days at the Hotel John Marshall, with the following speakers, among others:

Dr. John O. McReynolds, Dallas, Texas, Rôle of the Crystalline Lens in the Function of Vision in Men and in the Lower Animals: Practical Consideration of Cataracts in the Human Subject.
Dr. George M. Piersol, Philadelphia, Clinical Value of Studies on Peripheral Circulation.
Dr. W. McKim Marriott, St. Louis, Some Therapeutic Procedures Based on Recent Advances in Biological Chemistry.
Dr. Dean Lewis, Baltimore, President, American Medical Association, Abdominal Lesions: Their Signs and Symptoms.
Dr. Oswald S. Lowsley, New York, New Developments in Kidney Surgery.
Dr. George T. Pack, New York, Treatment of Gastric Cancer by Surgery and Radiation Treatment.
Dr. Charles Mazer, Philadelphia, Diagnosis and Treatment of Functional Uterine Bleeding.
Dr. John deJ. Pemberton, Philadelphia, Rational Treatment of Hyperthyroidism.

Speakers who will address sectional meetings during the two following days include:

Dr. Charles F. McKhann, Jr., Boston, Immunity in Infants to Infectious Disease.
Dr. Lawrason Brown, Saranac Lake, N. Y., Referred Abdominal Symptoms from Pulmonary Tuberculosis.
Dr. Hugh S. Cumming, surgeon general, U. S. Public Health Service, Washington, D. C., The Recent Outbreak of Encephalitis in St. Louis.
Dr. Charles A. McKendree, New York, Psychopathic Personality: Medicolegal Aspects.
Dr. Byrl R. Kirklin, Rochester, Minn., Roentgenologic Features of Ulcerating Lesions of the Stomach and Their Differential Diagnosis.
Dr. Frederick A. Coller, Ann Arbor, Water Metabolism in the Surgical Patient.
Dr. Clay Ray Murray, New York, Recent Observations in European Orthopedic Clinics.
Dr. Logan Clendening, Kansas City, Mo., The Stone Age of Surgery.
Dr. Edward H. Cary, Dallas, Texas, Ocular Tumors.
Drs. Jacob C. Geiger and Jacques P. Gray, San Francisco, Intravenous Use of Methylene Blue Solutions in the Treatment of Cyanide and Carbon Monoxide Poisoning.

Special clinics will be held by the following sections: dermatology, conducted by Dr. V. Pardo Castello, Havana, Cuba; bone and joint surgery, Dr. Robert W. Johnson, Baltimore; obstetrics and gynecology, Dr. Henricus J. Stander, New York, and Floyd E. Keene, Philadelphia; radiology, Dr. Byrl R. Kirklin, Rochester, Minn.; urology, Alfred I. Folsom, Dallas, Texas, and medicine, Drs. Oliver H. Perry Pepper and Baldwin H. E. W. Lucke, Philadelphia. In addition, an allergy clinic and round table discussion has been arranged by Dr. Warren T. Vaughan, Richmond, who will hold clinics; Dr. George Piness, Los Angeles, will be the guest speaker on "Food Sensitivity: Its Status in Allergy." During the same week the National Malaria Committee, the southern branch of the American Public Health Association, the American Society of Tropical Medicine and the southern section of the Society for Experimental Biology and Medicine will hold their annual meetings in Richmond. A reception and ball in honor of the president will be held Wednesday evening at the Mosque, and there will be golf and trap shooting tournaments Thursday afternoon.

Deaths in Other Countries

Pierre Paul Emile Roux, director of the Pasteur Institute, Paris; renowned for research in collaboration with Pasteur, and for his pioneer research on diphtheria, November 3, aged 80. ——**Sir George Henry Makins,** London, author and formerly president of the Royal College of Surgeons, November 2, aged 80.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 21, 1933.

Facts About the Unfit

Lord Horder is the leading advocate in this country of birth control and the sterilization of the unfit. In an address in the graduate course at the Hampstead General Hospital he said that a national stock taking showed some unpalatable facts. In this country, one in 120 persons was feebleminded, one in 200 was insane, and one in ten was too dull or too sickly to be absorbed into industry. The expense of educating and caring for these inefficients was enormous, but more serious was the fact that the future stock was being recruited from them. The aim of eugenics was to control the reproduction of unfit types and to encourage fertility in types above the average. But the eugenic movement sought to operate only by voluntary methods, doing nothing to infringe on the liberty of the individual. It advocated the voluntary sterilization under proper safeguards of all mental defectives, all mental convalescents and all who suffered from gross mental and physical defects that were proved to be transmissible. Compulsory sterilization, though legal in some countries, was not advocated in this country.

In regard to birth control, he suggested that local authorities should be empowered to provide, under medical supervision, instruction in contraceptive methods for married women who asked for it on economic and eugenic grounds as well as on medical grounds, on which alone instruction was now given. The science of heredity should be taught as part of the medical student's curriculum. Enormous opportunities for adding to the knowledge of genetics were lost by lack of training and, therefore, lack of interest among physicians. There should be attached to the ministry of health a small group of medical men and women to whom vital statistics of life and death and disease should be readily available on the one hand, and contact with hospitals and general practitioners on the other.

Asthma Due to Deficiency of Epinephrine

The value of the injection of epinephrine in the treatment of asthma is well known but the theory, advanced at the Section of Therapeutics of the Royal Society of Medicine by Prof. J. H. Burn, that the attacks are due to deficiency of epinephrine in the system is new. He referred to the work of Loewi, who suggested in 1921 that the autonomic nervous system acted by liberation of a chemical substance at its terminations. It was now accepted that the parasympathetic nerves liberated acetylcholine and it was widely believed that the sympathetic liberated epinephrine or an epinephrine-like substance. Dale and Dixon showed that tyramine acted like epinephrine but was less potent. But in a perfused organ the vasoconstrictor action of tyramine was lost (as well as that of ephedrine), although the constrictor action of epinephrine and the dilator action of histamine were well displayed. Further investigation showed that the site of action of tyramine and ephedrine differed from that of epinephrine, for the action of the two former was lost in organs of which the sympathetic supply was degenerated, while the action of epinephrine was retained. Hence epinephrine must act beyond the nerve endings, while tyramine and ephedrine acted on these endings. But if the sympathetic nerve acted by liberation of epinephrine, a store of this substance must be already present at the nerve ending for release to enable tyramine or ephedrine to act. Professor Burn found also that, in the presence of epinephrine, both ephedrine and sympathetic stimulation produced vasodilator effects not otherwise seen. The conclusion was drawn that the response to sympa-

thetic stimulation in the body depended on the amount of epinephrine in the circulation. This agreed with the observation of Graham that asthmatic patients who needed much epinephrine did not respond to ephedrine. Evidently their blood contained too little circulating epinephrine. Professor Burn considered such persons analogous to those deficient in thyroid secretion. Hence he suggested that those who had the least amount of circulating epinephrine would be predisposed to asthma. Attacks would occur because the bronchodilator nerves failed to act efficiently. They would be brought about whenever the bronchi were unduly constricted, by vagus impulses, by the reflex effect of nasal inflammation, or by a chronic catarrhal state of the bronchi themselves. If the precursors of epinephrine could be identified, its formation might be increased in the body by their addition.

Food Poisoning from Pudding Made from Peas

A small outbreak of food poisoning from an unusual source has occurred in the St. Pancras district of London. It was traced to pudding bought in a shop. Ten persons who partook were taken ill; two (boys aged 11 and 13) died. The symptoms were diarrhea, vomiting, abdominal pain, passage of blood and mucus, cyanosis, tachycardia and high temperature. A high leukocytosis (up to 76,000) was observed. The pudding was made by boiling dried peas with sodium bicarbonate in an enamel sauce-pan. The peas were then beaten up with salt in a glazed earthenware vessel. About six other persons bought the remainder of the supply, but are not known to have suffered. Pudding made from the same supply of peas was sold on the preceding day without any ill effects being reported. Samples of the peas, bicarbonate and salt used were chemically analyzed without any impurity being found. In one case an organism, thought to be Flexner's bacillus, was isolated from the stools.

Panel Physicians in the Hands of Money Lenders

At a meeting of the National Association of Insurance Committees, it was stated that the cases in which young panel physicians assigned all their panel fees to money lenders were on the increase. In some cases they were the salaried servants of the money lenders and subject to a month's notice. The Lancashire Insurance Committee had on its books seventy-eight cases in which panel fees amounting to $175,000 a year were assigned to money lenders, who were exercising an increasing influence on the administration of medical benefit, though their only qualification was money. The young physician who had not the money to buy a practice went to an agency specializing in advancing on the security of practices. The first thing he had to do was to sign an undated form of resignation from the panel service and then a mortgage at the prodigious rate of 40 per cent. If he became soured and threw up the practice, the money lender would pocket the gains to date and look out for a fresh victim. He completed the form of resignation already in his hands and notified the insurance committee of the name of the successor. In one case the wife of a physician, herself also one, became a party to her husband's contract and covenanted to apply for admission to the panel list and have transferred to her her husband's patients, if called on to do so by the mortgagee. The association decided to refer the matter to the executive council to take whatever action was deemed necessary.

Automobile Accidents in London: Four Deaths Daily

Notwithstanding all that has been done to regulate automobile traffic—one-way streets, roundabouts, and control of crossings by police as well as by automatic signals—a substantial increase in the number of accidents has been recorded in London in the last three months. The total number of fatal accidents for the three months ended September 30 was 381, compared with 304 for the corresponding period of last year. The number of persons killed exceeds an average of four a day. The number injured was 16,208, against 14,340 for last year. Private automobiles headed the list of vehicles involved, with 125 killed, compared with 87 last year. The other figures included: trade and commercial vehicles, 83 killed and 2,170 injured, against 66 killed and 1,795 injured last year; motor cycles, 80 killed and 3,420 injured, against 87 killed and 3,430 injured; omnibuses, 25 killed and 611 injured, against 20 killed and 527 injured; coaches, 16 killed and 162 injured, against 5 killed and 77 injured; cabs, 8 killed and 337 injured, against 6 killed and 297 injured last year; street cars, 6 killed and 329 injured, against 3 killed and 380 injured last year. Bicyclists were involved in accidents in which 33 persons were killed and 3,633 injured, compared with 25 killed and 3,015 injured last year. The increase in accidents is partly due to the constantly increasing number of automobiles on the streets, but increased speed seems to be more important and a demand has arisen for the reimposition of a speed limit, which was abolished by the last road traffic act. Few pedestrians can cross a street in less than ten seconds, while many modern streets require fifteen seconds. The pedestrians may look carefully to the right and left but do not appreciate that unless they run hard they may be struck by one of the cars in the distance or round the corner. On the other hand, many drivers resent anything ahead which may check a smooth and rapid run and trust to the agility of pedestrians to avoid an accident.

Fatal Phrenic Avulsion

Phrenic avulsion is generally regarded as a trivial operation. But Drs. Cassidy and Lee of St. Thomas's Hospital have reported in the *British Medical Journal* a case in which it proved fatal. A lorry driver, aged 23, suffered from bronchiectasis following postoperative bronchopneumonia. He was expectorating a pint of fetid sputum daily and had lost 3 stone (19 Kg.) in weight. On admission to the hospital, Aug. 15, 1932, he weighed only 7 stone and 5 pounds (46.7 Kg.). The fingers were clubbed and the physical signs suggested gross bronchiectasis at the base of the right lung, with lesser involvement of the left base. By the injection of iodized oil intratracheally these findings were confirmed. He was treated by inhalations of creosote, postural drainage and bronchoscopic lavage but steadily deteriorated. Phrenic avulsion was attempted under local anesthesia, Jan. 16, 1933, the operating table being tilted so as to elevate the head and chest. The nerve was exposed in the neck and clamped, whereon the patient hiccuped once and became acutely dyspneic. After an abortive attempt to cough he lost consciousness. A tracheal catheter was passed and a considerable quantity of pus aspirated. Oxygen was then blown in by way of the trachea and he slowly improved. The incision was rapidly closed and no attempt made to proceed with the operation. He was sent to the ward, where he again became acutely dyspneic and died. The necropsy showed complete collapse of the lower half of the right lung. The trachea and main bronchi contained much pus. Gross bronchiectasis involved the right lower lobe with cavities of the size of a walnut. Bronchiectasis in much less degree involved the rest of both lungs. Death was attributed to asphyxia consequent on sudden flooding of the whole bronchial tree by pus squeezed out of the cavities in the right base when the right dome of the diaphragm made its rapid ascent. The authors suggest that preliminary postural drainage or bronchoscopic lavage would have saved the patient.

Death of Sir Arthur Mayo Robson

The death of Sir Arthur Mayo Robson, at the age of 80, removes a great pioneer of abdominal surgery. A Yorkshireman by birth, he was educated at the Leeds School of Medicine,

where he distinguished himself by obtaining every prize open to a student, though he had at the same time to work as assistant to a local physician. In 1876 he was appointed lecturer on anatomy in the school, and in 1884 he became surgeon to the Leeds General Infirmary. Later he was appointed lecturer in pathology in the school and professor of surgery in the Yorkshire College. In 1902 he moved to London. His most important pioneer work was done on the treatment of gallstones and diseases of the bladder, on which he was the leading authority of his day. He wrote on these subjects in Allbutt's System of Medicine and in Keen's System of Surgery. In a tribute to him, Lord Moynihan, who was his house surgeon, says: "His capacity for seizing upon relevant features in a new problem, of capturing the essential principle and neglecting specious nonessentials seemed like wizardry. . . . At one period he was the greatest surgeon in Europe." Though his chief work was abdominal, he distinguished himself in the whole field of surgery. He was the first in this country to undertake nerve grafting. He quickly followed Allingham in removing torn semilunar cartilages. He was one of the first to excise spina bifida. His fame as an operator was so great that surgeons came from all over Europe to see him at work. He was president of the Surgical Section of the International Medical Congress in 1900 and 1906 and of the British Gynaecological Society. At the outbreak of the Great War he had retired from practice, but he at once went with a field hospital to France and by invitation of the French authorities organized a complete hospital for the French army. For his services he was appointed to the Legion of Honor. He also served in Egypt and Gallipoli.

Dr. Banting Honored

Dr. F. G. Banting, professor of medical research in Toronto University and the discoverer of insulin, was admitted an honorary fellow of the Royal College of Surgeons. He was already a member of the college. He was welcomed by the president, Sir Holburt Waring, and signed the roll in the presence of the council. It is three years since Dr. Banting was nominated for the fellowship, but this was the first opportunity to confer it on him. He was born in 1891.

PARIS

(From Our Regular Correspondent)

Sept. 27, 1933.

Important Changes in the Medical Curriculum

The superior council of public instruction has made two important changes in the medical curriculum. The first point concerns a modification in the program of premedical studies that was formerly pursued in the schools of medicine. The professors of medicine complained then that this program was too theoretical and that it amounted practically to the loss of a year's time, for the student should be brought, as soon as possible, in contact with the anatomic institute and the hospital wards. Under the influence of these arguments, a preliminary certificate for medical students was granted after a year's study in a faculté des sciences. It is now recognized that this was a mistake. The instruction of the professors in the facultés des sciences proved to be much more theoretical than in the facultés de médecine, and quite disconnected from any applications to medical practice. Furthermore, it was necessary to retain in the facultés de médecine the chairs of instruction in medical physics, biologic chemistry, parasitology, and materia medica and pharmacology, with the result that the students go twice over the same material. The facultés de médecine would have liked to have the preliminary certificate abolished and replaced by a year of supplementary studies added before the terminal thesis, in order to increase the student's clinical experience. The facultés des sciences, in the discussion before the superior council, refused to dismiss the professors in charge of the studies in question. However, the facultés de médecine gained their main contention, and the creation of a supplementary year was granted. Hence, beginning Oct. 1, 1934, students of medicine must complete six years of medical study, which is going to add a considerable amount to the total expense of a medical education. There will be many protests. The preliminary medical course, it appears, will be modified, taking on a more directly biologic character. This change seems hardly justified, since the sciences studied in the facultés des sciences will be repeated in the faculté de médecine during the third year. The sixth supplementary year has more to justify it. The medical students, French and foreign, have become so numerous, in spite of the unfavorable future outlook for the medical profession, that only the students who secure, through a competitive examination, posts as interns or externs can take up the practice of medicine with much hope of a reasonable compensation. The others are only auditors of the professor's lecture in the hospital wards, far from the patient's bedside, and are never permitted to make an examination of the patient on admission, to apply a dressing, to give immediate treatment of a dislocation or a fracture, much less to perform a surgical operation of any kind, all this work being reserved for the interns and externs. Henceforth, students who have hitherto been at a great disadvantage will, for one year, live the same life as the interns and externs and will perform important services, both night and day, under the same conditions that obtain for real professional practice. When the hospitals located in the university cities become too crowded, which is the case in Paris and Lyons, students will be permitted to serve as assistants in hospitals located in the provinces, where assistants are often much needed. The proposed reform will contribute toward raising the standard of general practitioners. Another regulation introduced by the superior council reinforces the rigorous character of the various examinations and provides for the definitive elimination of a student after a certain number of failures. The latter reform has received the strong approval of the Confédération des syndicats médicaux, as likely to aid in doing away with the surplus of physicians, and has appeared preferable to the limitation of the number of students to be admitted by the facultés de médecine. The latter method did not appear feasible because of the wide variations in attendance at the various institutions.

The New Neuropsychiatric Clinic

The Clinique de neuro-psychiatrie infantile, created at the Faculté de médecine de Paris, is an innovation. The suggestion for the creation of the clinic emanated from a Paris attorney, Mr. Rollet, who was animated by a lofty spirit of charity, developed by his contacts with the movement in aid of delinquent children. With perseverance, he has succeeded in creating, within the French system of judicial organization, special courts for the trial of children charged with various misdemeanors, who heretofore had been tried by the ordinary courts, along with adult criminals. The judge had either to commit the child to a house of correction—a sort of prison, school and workshop combined—where his complete corruption was almost a certainty, or to return him to his parents; that is, to an environment in which the absence of supervision had been the cause of his downfall. The children brought before the juvenile court are now subjected to an examination by medical specialists in the children's psychiatric clinic before any further action is taken. The new clinic created meets this need, and is open, at the same time, as a public dispensary to the parents who, of their own accord, take their children there before the police has had occasion to arrest them for some misdemeanor. The clinic, serving also as a center of study and instruction, is

visited frequently not only by physicians and legislators but also by psychologists eager to study various phases of mental development in man. The well known writer of novels Paul Bourget, who is 80 years of age, is one of the most frequent visitors at the dispensary. Of the 665 children examined during the six months just passed, 35 were sent to psychopathic hospitals. This group was composed of psychopathic patients, idiots or imbeciles, children with a greatly disturbed equilibrium, epileptic patients, patients who have only partially recovered from encephalitis, inadaptable perverts, and adolescents with dementia praecox. Fifty-nine children were placed in institutions of reform; 277 were turned over to children's hospitals for treatment; 237 were entrusted to an *œuvre de patronage*, or home-finding society, which places the children in the rural districts in the homes of farmers, to learn farming, where they remain under the periodic control of the society. Thirty-two were placed in special homes for girls, while twenty-four remained under observation.

Vaccination Against Yellow Fever

Yellow fever continues to be widely prevalent in the Senegal, although it is decreasing. The authorities have become resigned to the belief that the disease can be eradicated only through the general application of vaccination. The Institut Pasteur de Paris has therefore organized a public vaccination service for persons about to go to the Senegal, which service is under the direction of A. Pettit and C. Stepanopoulo, who have made special studies on yellow fever. Since 1928, they have made from inoculated monkeys an excellent immunizing vaccine. They can no longer procure a sufficient number of monkeys, however, since the price of them has risen. They employ, therefore, concurrently the procedure of Drs. Sawyer, Kitchen and Lloyd of the Rockefeller Foundation, which comprises a virus and an immunizing serum, the latter being derived from convalescent subjects. They have, however, modified the procedure by substituting immunized horse serum for the serum of convalescents, since the horse serum is easier to procure and is more active. Mr. Stepanopoulo has vaccinated himself in this manner. Mr. Pettit is already immunized, having contracted yellow fever during his mission in the Senegal, about the time that Noguchi's death occurred.

BERLIN

(From Our Regular Correspondent)

Sept. 25, 1933.

Public Health Department Dissolved

In connection with the administration of the reich by the national-socialist party, the department of public health has been dissolved and in its stead an expert council on public health created. Dr. Wagner, the leader of the German medical profession, has been chosen to organize the new council and to serve as its director. This council will handle all questions having to do with the preservation of the health of the German people, particularly questions pertaining to demographic science, hereditary biology, race hygiene, social hygiene and popular enlightenment on health problems, including questions that concern exponents of nature cures and various therapeutic cults. All party headquarters must submit to this council all questions that concern the fields taken over by the council, must present all measures before they are carried out, and must turn over for approval all reports to the authorities, before they are submitted. In all matters that come under its jurisdiction, the council will deal with the reich, the *länder* and the communes, and likewise with bodies established for the interpretation of public law, and is entitled to present inquiries, protests and petitions to these centers. The governmental authorities of the reich and the *länder* are requested, when taking up matters coming under the jurisdiction of the council, to get in touch with that body before reaching conclusions, and to issue similar instructions to subordinates and to legal bodies.

The Haff Disease

In previous letters, the peculiar manifestations of disease occurring in the vicinity of the Haff, an arm of the sea, in East Prussia, have been discussed. At that time it was considered that acids combined with a resinous base were the cause of the disease, which originated chiefly in fishermen. The whole situation is not yet clarified. However, a survey by the Würzburg pharmacologist Professor Flury, in the *Klinische Wochenschrift*, deserves attention. The assumption that the disease is due to arsenic poisoning, which has long been the official conception, is untenable, nor has adequate proof been furnished for the assumption that resinous acids play a causal rôle. The poor results following the introduction of preventive measures, and the interruption in the development of new cases, would indicate that the origin of the disorder is not to be found in the municipal or industrial waste waters. It appears more than likely that the Haff itself contains the source of the poison. Through the disintegration of countless animal and vegetable organisms, and particularly those of a microscopic nature, vast quantities of poisons may be formed in the waters of the Haff. They may be of an exogenous nature—hemolytic, for instance—muscle and nerve poisons of the sapotoxin or the curare group, which are traceable to plankton, accumulating in the mud and thence ingested by fish. On the other hand, endogenous factors arising in the organism of human beings or of fish cannot be excluded. The fish diet of the population must have a connection with the disorder. In any event, it is an exaggeration to state, as the press did recently, that the Haff disease mystery has been cleared up.

Exaggerated Advertising of "Patent Medicines" Prohibited

For many years the exaggerated claims made in the advertising of "patent medicines" to the public have been a constant source of complaint. The *Nachrichtenblatt des Nationalverbandes der Deutschen Heilmittelindustrie* has published the new regulations to be observed in the advertising of medicines as set up by the "Begutachtungs- und Beratungsstelle für Werbungsfragen." The following excerpts deal with essential points: The advertising to the public of medicines alleged to be effective in grave diseases and advertising encouraging self-treatment of cancer, diphtheria, lupus, pulmonary tuberculosis, epilepsy, arteriosclerosis, and the like, must be absolutely stopped. Testimonials of laymen prove in such cases absolutely nothing. Every manufacturer must therefore make a thorough investigation in order to ascertain whether he can furnish unquestionable scientific proof that the preparation or the apparatus will actually accomplish what he promises; the manufacturer who exceeds such limitations is subject to a penalty. The health authorities consider such assertions as "The remedy helps at once . . . or never fails to help" as unprovable. The manufacturer may state "The remedy has helped" if on demand he can furnish documentary proof based on scientific tests. Other exaggerations are warned against; for example, the use of the term "preeminent" in referring to the remedy or the term "glorious" in referring to the results. That manufacturers must avoid all misleading superlatives goes without saying. Advertisements in which an individual is put forward in the rôle of a "grateful patient" to inform persons interested how he was cured of a grave disease are prohibited; they are calculated to deceive the public, since, in reality, the manufacturer is the one who inserts and pays for the advertisement. Testimonials and letters of thanks supplied by laymen have

little weight in proving the value of medicines. Such testimonials must not contain untrue statements or exaggerations calculated to deceive. Prophylactic remedies may not in this manner be put forward as medicines. The following explanation is given: "If the pharmaceutic industry does not wish to incur the danger of having the use of testimonials in advertisements entirely prohibited, it must of its own accord impose certain restrictions on itself. It is absolutely inadmissible to select from available testimonials precisely those for publication that announce a cure in a particularly severe case. Under no circumstances may the impression be given that results that were possibly secured under especially favorable circumstances are always attainable or to be expected with certainty." When the statements of physicians are used, names and places must without fail be given in unabbreviated form. The use of any official titles that might give a false impression is strictly forbidden. Writers of advertising copy who, for a remuneration, furnish favorable testimonials may possibly have their names published in connection with their offense. Guaranties of a cure are absolutely prohibited; likewise promises to return the sum paid for the remedy in case it does not prove effective. In stating the effects of the remedy, every advertisement must make it clear how the remedy acts in the disease in question and to what extent it can consequently influence the course of the disease. A statement that the remedy is of aid in a long list of diseases is deceptive.

JAPAN

(From Our Regular Correspondent)

Aug. 28, 1933.

Outbreak of Epidemic Encephalitis

Since the epidemic of 1924, encephalitis has appeared sporadically. Since last June, however, it has again been increasing in the central parts of Japan, and suddenly it broke out in the Rin-kiu Islands in the east China Sea near Formosa. From June to the end of July, sixty-eight cases were found, with twenty-five deaths. Of 298 patients in other districts, 161 died. The total deaths were 220 out of 427 cases throughout the country. The Japan Science Promotion Association has formed a commission to study the cause of the epidemic. Professor Inada of the Tokyo Imperial University medical department has been appointed chairman. The commission is divided into eleven sections, each section having as its leader a well known specialist. Two groups have already been sent to places where the disease is raging. As this epidemic threatens to spread all over the country, the police and physicians are cooperating to prevent a general outbreak.

Study of Woman's Work on Farms

The Kurashiki Scientific Research Institute for Labor, which was established by a millionaire and is the only institute of the kind in this country, has recently opened a department to study agricultural labor. Dr. Teruoka, chief of the institute, says: About half of the people of Japan follow agriculture as their means of living. A characteristic of Japanese agriculture is that the work is done by family cooperation. In a farm house, the master works eleven hours and forty-five minutes a day on an average, while the mistress works eight hours and fifty-nine minutes a day, besides doing domestic work for about four hours a day; so her work hours number thirteen. Her part in farming operations as a laborer as well as a mother is most important. Of late, agriculture has inclined to many-sided operations, only to add more to her labor. What kind of culture and education has been given the woman who is to play such a valuable part in this great industry? Only a conservative, traditional training has been given her, disregarding the strides made in all other business in recent years.

The institute is going to deal with material and information to be originated by itself to aid women to adjust themselves to modern ways. In order to obtain the best results of study, thorough and deliberate researches of a small number would be preferred to a great number of hurried investigations. The families to be studied with regard to their health and labor have been selected. They all belong to the middle class with a yearly income of about 1,000 yen and live on one hectare or so of land.

Roentgen Treatment of Filariasis

Filariasis, which is mainly found in the southern Loochoo Islands and in some districts in Japan proper, has long been considered incurable. After years of research Dr. Yamaguchi of the Nagoya Medical College has succeeded in treating the disease with the help of the x-rays. The only treatment heretofore applied was by means of drugs. Dr. Yamaguchi has shown that from eleven to twenty-two treatments with the x-rays all over the body will destroy the generative cells of the filaria and stop their reproduction, at the same time reducing the induration of the lymphatic vessels. He thus successfully treated all patients sent in. His success is considered here almost miraculous.

Society News

The Japan Physiologic Society held its twelfth general meeting at Kanazawa in July under the chairmanship of Dr. Ueno. Papers were read on noise, diet, nutrition, the relation between humidity and perspiration, and the theory of nerve conduction. There were many papers on the study of the heart. The meeting lasted three days, and 201 papers were read.

BUDAPEST

(From Our Regular Correspondent)

Sept. 13, 1933.

The Friendship Between Billroth and Brahms

Dr. János Bókay, retired professor of pediatrics at the University of Budapest and founder of the Medical Philharmonic Society, recently addressed the medical society on the friendship between Johannes Brahms and Billroth. It began when the latter taught surgery in Zurich (1860-1866). Brahms, yet a youth, was nearing the peak of his development as a composer of music. The Billroth-Brahms friendship lasted for almost three decades, until the death of Billroth in 1894. There was scarcely four years' difference between their ages. Billroth was born in 1829, Brahms in 1833.

Billroth had a craving for music and he played well. In early youth he prepared for a musical career, and from the great number of letters collected during the time of his professorship it is evident that his love for music lasted until his death. While in Zurich he wrote musical criticisms for the foremost newspaper, and a large number of eminent musicians were his close friends. The Allgemeine Musik-Gesellschaft of Zurich had a high opinion of Billroth's musical views, which were often asked for.

Billroth was a gifted pianist and he learned the viola from Eschmann. He played the viola in company with professional musicians. He cultivated chamber music also in Vienna and often played at his home in Alser Strasse, with his friends. In a manuscript of 250 pages, found in his desk, he had written, two days prior to his death, the following words: "This manuscript should be handed to my dear friend Hanslick, who is to decide about it according to his judgment." The manuscript appeared in book form in 1898 with the title "Wer ist musikalisch?" with a foreword by Hanslick. Billroth composed several songs, which, however, remained only in manuscripts with the exception of one, "Todessehnsucht," which was published after his death as a supplement to "Briefe von Theodor Billroth."

According to Tibor Györi, teacher of medical history at Budapest, Billroth composed also a one act opera, which was performed at his home before an audience of distinguished friends. Of the 442 letters collected and published in 1895 in Hanover, Billroth wrote thirty-five to Brahms, twenty-nine to Hanslick, and the rest to prominent medical men.

In 1867, Billroth occupied a professorial chair in Vienna, where Brahms had already moved. June 2, 1867, he wrote to Lübke: "I am every day in the company of Brahms." December 24, he wrote: "Brahms is ever more and more amiable." In 1867, Billroth resolved, with Brahms, to spend some weeks in Italy. About this excursion Brahms recorded the following episode: When they were on a boat going from Naples to Sicily, a woman passenger was suddenly beset with labor pains. The captain, knowing that Billroth was on the boat, asked him to give medical attendance to the woman. Billroth wavered a bit, saying he had no obstetric experience, but he proved to be an excellent obstetrician in this case and he himself was amazed at his success.

Billroth became in Vienna the subject of great admiration. The busy professor, however, could spare time every evening to meet his musical friends. In 1877 he wrote to Brahms: "My relation with the goddess Musica has slackened lately, owing to my many official and medical activities. Now that I am on a holiday, I start a new relation with her. I brought with me my upright piano, all your songs and other notes, and I greet you through the mountains." In 1885, he wrote: "I am dissatified with myself that I pay less and less attention toward the Muses. Of course, they remain ever young, while I, I am sorry to say, get elder from year to year." That he still used his piano is shown in a letter written to Hanslick, in which he informed him with great pleasure: "Tonight we made with Fräulein Erna von Bamberger a four-hand revel: within two hours we ran through Tschaikowsky's two big orchestral scores and Fuchs's "Glimmer."

Billroth's devotion to Brahms increased. When, on Nov. 6, 1890, he had Brahms's new G flat quintet with two violas, he went to his desk at 1 o'clock in the morning and wrote: "The greater part of the time of your budding I lived with you and I often meditated about what is real happiness. Well, tonight, listening to your music I was happy. This stands quite clear before me." Brahms met his musical friends in the Igel, a restaurant in Vienna. In his advanced age he willingly accepted invitations to dinners. He enjoyed good foods, particularly if good wines were served. Ehrbar, the Vienna piano manufacturer, celebrated every birthday of Brahms, May 7, by arranging an asparagus breakfast. Among the guests were all the most intimate friends of the master, and Billroth, Hanslick and Goldmark were never missing. The breakfast was served at noon. Although the pièce de résistence was the asparagus, which was served abundantly, there was plenty of ostrich and caviar and Veuve Cliquot champagne.

In 1892, Billroth felt the onset of symptoms of arteriosclerosis. He wrote to Brahms: "For three days I have again felt worse and until the end of the week I have to dose myself with digitalis." Yet his love of music held fast and in the same letter he said: "Yet I occupied myself with your music more than ever; all your four hand notes were with me and I played them in company with Dr. Fleischl of Rome." The disease, however, disurbed the strong body of the great genius more and more and Billroth's capacity begun to drop in every direction. Four weeks prior to his death, Billroth wrote to Professor Czerny, operative surgeon of the Heidelberg university: "If I live I shall open the new clinic in the autumn of 1895 and then in the course of the next year I shall retire. But with my ever increasing heart weakness I doubt whether I shall live to that time. I am resigned to anything. I am prepared for the road." Jan. 12, 1894, he wrote to Brahms (the four hundred and forty-first letter): "In spite of the admirable weather I feel unwell. I cannot sleep and I have difficulty in breathing. Besides my broodings I have no recreations." This was the last letter addressed to Brahms and in spite of his condition he contemplated at length the national German dance music and German folk songs.

Billroth closed his eyes forever, February 8. In 1880, he wrote to Brahms on the occasion of the burial of a friend: "I should not like to cause obstruction in bustling Alser Street. I wish to be carried into the Central cemetery without music, in a simple way. There some music, a few words at the grave by one of my friends or pupils, again some music." However, Billroth's burial took other course. A huge mass of people blockaded the traffic the entire way. Brahms wrote to his friend Widmann about the burial: "In the innumerable mass of men there was not one curious or indifferent face: only sympathy and love." Brahms was much affected by Billroth's death and three years afterward he also died. March 7, 1897, Brahms appeared at a philharmonic concert in Vienna. The first number of the program was his fourth symphony, which was a great success. Brahms, who had been sitting in the background, came forward to receive an ovation. As Hanslick wrote: "Devotion and sympathy suffused the whole audience, a clear presentiment of the fact that in this hall the Master was being greeted for the last time." From this time on Brahms's condition became worse from day to day and on April 3 he died.

He was buried in the Vienna Central Cemetery in the vicinity of Schubert's grave, close to the mound of Beethoven. One of his biographers remarked: "His soul flew into the sunlit home, whereto prior to him, in quick succession, went Hans von Bülow, Teodor Billroth and Klara Schumann, three people who stood nearest to his heart."

Marriages

ROBERT LANE WARE, A. Surg. Lieut. (j. g.) U. S. Navy, to Miss Mary Fairfax McCallie at Chattanooga, Tenn., in August.

RAYMOND HARRISON RIGDON, Durham, N. C., to Miss Mary Anita Stigers of Atlanta, Ga., October 2.

FRED ARNOLD KENNEDY, Sacaton, Ariz., to Miss Lilian Emeline Ball of Cohassett, Mass., October 17.

ERNEST WILLIE GRUMBLES, Cristobal, C. Z., to Miss Ella Pattee of Little Rock, Ark., September 15.

ROBERT EDWARD LEE GUNNING, Galesburg, Ill., to Miss Jean Zearing of Princeton, October 7.

SAMUEL RALPH TERHUNE to Miss Pauline Carolyn Veitch, both of Birmingham, Ala., October 14.

JAMES CARLISLE MOORE, JR., Marion, S. C., to Miss Evelyn Brabham at Bamberg, August 5.

WALTER PERCIVAL RHYNE, Albany, Ga., to Miss Mytris York of Clarkesville, October 4.

WILBUR P. BAILEY, Philadelphia, to Miss Margaret Robinson of Paoli, Pa., October 28.

FLETCHER ADRIAN SMITH, Elberton, Ga., to Miss Nell Wilson of Vidalia, October 1.

RAY WOIZESKE KING to Miss Mary Rose Sherburne, both of Peoria, Ill., August 24.

JOHN COUDON STAGEMAN, Detroit, to Miss Leola Francis at Waterford, August 19.

HERMAN C. CLAYTON, Sidney, Ohio, to Miss Gladys Pardee, in Cincinnati, August 6.

ROBERT ALEXANDER ROSS, Durham, N. C., to Miss Rosalie Walter, October 4.

CHARLES FRANKLIN MOHR, Baltimore, to Miss Mary Caroline Hood, July 1.

Deaths

John Speese ⊕ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1902; associate professor of surgery, University of Pennsylvania Graduate School of Medicine; formerly assistant professor of surgical pathology at his alma mater; member of the American Surgical Association; fellow of the American College of Surgeons; aged 53; on the staffs of the Children's Hospital and the Presbyterian Hospital, where he died, October 15, of coronary occlusion.

John Dean Elliott, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1901; clinical professor of surgery at his alma mater; fellow of the American College of Surgeons; served during the World War; surgeon to the Hahnemann and Woman's Southern Homeopathic hospitals and the Abington Memorial (Pa.) Hospital; aged 57; died, October 8.

Andrew Curtin Santee, Middletown, N. Y.; Jefferson Medical College of Philadelphia, 1886; member of the Medical Society of the State of New York; member of the board of education and health officer of the towns of Wallkill and Wawayanda; on the staff of the Horton Memorial Hospital; aged 69; died, October 16, of carcinoma of the prostate.

Oliver Rowland Blanchard ⊕ Jersey City, N. J.; University of the City of New York Medical Department, 1891; past president of the board of education; one of the founders and president of the Fairmount Surgical Sanatorium; on the staffs of the Jersey City and St. Francis' hospitals; aged 75; died, October 14, of heart disease.

William Benjamin Jackson, Cambridge, Mass.; Harvard University Medical School, Boston, 1880; member of the Massachusetts Medical Society; formerly member of the board of health of Lowell; at one time on the staffs of the Lowell Corporation Hospital and the Lowell General Hospital, Lowell, Mass.; aged 80; died, October 6.

John Harvey Jewett, Canandaigua, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1879; member of the Medical Society of the State of New York; on the staff of the Thompson Memorial Hospital; aged 79; died, October 14, of heart disease.

Andrew Victor Sykes, Winnipeg, Manit., Canada; University of Toronto Faculty of Medicine, 1924; served during the World War; on the staffs of the Children's Hospital of Winnipeg and St. Boniface (Manit.) Hospital; aged 36; was killed, August 13, in an automobile accident.

Joseph Aloysius Mehan ⊕ Lowell, Mass.; Tufts College Medical School, Boston, 1906; member of the New England Roentgen Ray Society and the Radiological Society of North America; on the staff of St. John's Hospital; aged 56; died, October 12, of hypernephroma.

Joseph C. Brookhart, Oak Forest, Ill.; St. Louis College of Physicians and Surgeons, 1903; member of the Illinois State Medical Society; on the staff of the Cook County Tuberculosis Hospital; aged 53; died suddenly, October 17, of heart disease.

Albert Okerstrom, Berkeley, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; also a minister; aged 62; died, September 20, in the University of California Hospital, San Francisco.

George Hutchins McNemer ⊕ Cairo, Ill.; University of Louisville (Ky.) School of Medicine, 1889; past president of the Alexander County Medical Society; formerly on the staff of St. Mary's Hospital; aged 67; died suddenly, October 18.

Henry Berrien Shaw, New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1877; member of the Medical Society of the State of New York; aged 82; died, October 10, of chronic endarteritis.

Rudolph A. Rulmann ⊕ Minster, Ohio; Medical College of Ohio, Cincinnati, 1881; past president of the Auglaize County Medical Society; member of the county board of health; aged 73, died, October 7, in St. Rita's Hospital, Lima, of uremia.

John Bernard Stackable, Fort Worth, Texas; Fordham University School of Medicine, New York, 1912; member of the Medical Association of Texas; served during the World War; aged 59; died, September 22, of chronic poliomyelitis.

James Walter Rendleman ⊕ East St. Louis, Ill.; Jefferson Medical College of Philadelphia, 1894; past president of St. Clair County Medical Society; on the staff of St. Mary's Hospital; aged 65; died, October 13, of heart disease.

Lewis Heisler Ball, Marshallton, Del.; University of Pennsylvania School of Medicine, Philadelphia, 1885; member of the Medical Society of Delaware; formerly United States Senator; aged 72; died, October 18, of pneumonia.

Benjamin Franklin Carr, Polo, Mo.; University of Missouri School of Medicine, Columbia, 1880; Jefferson Medical College of Philadelphia, 1886; member of the Missouri State Medical Association; aged 81; died, September 21.

Olander E. Wald ⊕ Los Angeles; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; formerly on the staff of the Lakeview Hospital, Chicago; aged 65; died, September 16.

Edward Mayo Anderson, New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1932; aged 27; on the staff of the U. S. Marine Hospital, where he died, August 29, of subacute endocarditis.

Ray C. Ash, Ashland, Ohio; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; served during the World War; aged 53; died, October 15, of chronic nephritis.

Joseph Redmond Condon ⊕ Des Moines, Iowa; Northwestern University Medical School, Chicago, 1908; aged 52; on the staff of the Mercy Hospital, where he died, October 12, of cardiorenal vascular disease.

Frank Henry Wheeler ⊕ New Haven, Conn.; Yale University School of Medicine, New Haven, 1882; past president of the Connecticut State Medical Society; aged 77; died, October 10, of carcinoma of the cecum.

James Edgar McKinney, Chesnee, S. C.; Chattanooga (Tenn.) Medical College, 1898; member of the South Carolina Medical Association; aged 64; died, September 7, in the Spartanburg (S. C.) General Hospital.

Harlin Andrew Harris, Guadalajara, Jalisco, Mexico; Syracuse (N. Y.) University College of Medicine, 1903; chief surgeon to the Southern Pacific Railroad of Mexico; aged 52; died, July 7, of angina pectoris.

John Dustin Howe ⊕ Tiffin, Ohio; Toledo Medical College, 1891; veteran of the Spanish-American War; aged 72; died, October 11, in the Mercy Hospital, of uremia and hypertrophy of the prostate.

Clarence A. Rothwell, Mexico, Mo.; Missouri Medical College, St. Louis, 1891; member of the Missouri State Medical Association; aged 67; died, September 30, of myocarditis and hypertension.

George Livingstone Ellis, Middleboro, Mass.; Harvard University Medical School, Boston, 1872; member of the Massachusetts Medical Society; aged 94; died, August 22, of arteriosclerosis.

Amos Evan Ayler, Greencastle, Ind.; Southern Homeopathic Medical College, Baltimore, 1897; aged 62; died, October 14, in the Methodist Episcopal Hospital, Indianapolis, of heart disease.

Matthew Alvin Barnes, Pardoe, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1893; member of the Medical Society of the State of Pennsylvania; aged 69; died, August 25.

Henry St. George Strouse, Omaha, Neb.; Hahnemann Medical College and Hospital of Philadelphia, 1886; aged 65; died, September 18, in the Douglas County Hospital, of myocarditis.

James S. Cobb, Odessa, Del.; Georgetown University School of Medicine, Washington, D. C., 1893; on the staff of the Kent General Hospital, Dover; aged 67; died, September 28.

George M. Kelly, North East, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1888; aged 69; died, June 1, in St. Vincent's Hospital, Erie, of uremia and prostatic hypertrophy.

William Huffman Niles, Benton, Tenn.; Atlanta College of Physicians and Surgeons, 1913; served during the World War; aged 46; was found dead, September 21, of a gunshot wound.

Ella Jane Fifield, Tacoma, Wash.; Cooper Medical College, San Francisco, 1883; formerly member of the board of education; aged 82; died, September 30, of carcinoma of the uterus.

Marian Elizabeth Parker ⊕ Kalamazoo, Mich.; Syracuse (N. Y.) University College of Medicine, 1926; on the staff of the Borgess Hospital; aged 38; died, September 8, of pituitary tumor.

John Page McMahan, Peoria, Ill.; Rush Medical College, Chicago, 1883; member of the Illinois State Medical Society; on the staff of the Proctor Hospital; aged 75; died, October 5.

Alpha Manly Chase, Denver; Colorado School of Medicine, Boulder, 1894; member of the Colorado State Medical Society; aged 60; died suddenly, October 6, of heart disease.

Marshall Orlando Terry, San Diego, Calif.; Homeopathic Hospital College, Cleveland, 1872; veteran of the Spanish-American War; aged 85; died, October 11, of lobar pneumonia.

Shaen Saurin Magan ✠ Covina, Calif.; College of Medical Evangelists, Loma Linda, 1921; member of the Radiological Society of North America; aged 37; was drowned, August 31.

Roswell Wetherbee, Belmont, Mass.; Harvard University Medical School, Boston, 1882; member of the Massachusetts Medical Society; aged 75; died, July 1, of cerebral hemorrhage.

Byron J. Murray, Saratoga Springs, N. Y.; University of Michigan Medical School, Ann Arbor, 1876; aged 83; died, September 22, of cerebral hemorrhage and arteriosclerosis.

Alfred Maucotel, Bay City, Mich.; School of Medicine and Surgery of Montreal, Que., Canada, 1877; aged 83; died, October 16, in the Mercy Hospital, of pyelonephritis.

Eugene Harp Dunnam, Houston, Texas; Texas Medical College and Hospital, Galveston, 1875; aged 84; died, September 29, of cardiovascular nephritis and myocarditis.

David Le May Mitchell, Cassville, Mo.; Atlanta Medical College, 1874; Hospital College of Medicine, Louisville, Ky., 1884; aged 84; died, September 28, in Springfield.

Cyrus Johnson McCombs, Matthews, N. C.; North Carolina Medical College, Davidson, 1905; formerly health officer of Gastonia County; aged 53; died, September 27.

Harry Norwood Street ✠ Lonoke, Ark.; Tulane University of Louisiana Medical Department, New Orleans, 1890; aged 65; died, October 3, of chronic myocarditis.

James Gordon, Columbia, Mo.; University of Missouri School of Medicine, Columbia, 1881; formerly mayor of Columbia; aged 75; died, September 29, of pneumonia.

Hilton A. Vickers, Youngstown, Ohio; Columbus Medical College, 1884; aged 76; died, August 23, of myocarditis, hypertrophic cirrhosis of the liver and arteriosclerosis.

Henry Armistead Bullock ✠ Richmond, Va.; University College of Medicine, Richmond, 1912; aged 42; died, October 2, in St. Luke's Hospital, of intestinal obstruction.

William Frederick Kaercher, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1885; aged 73; died, October 13, of carcinoma of the prostate.

George Arthur Dixon, Paris, France; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1878; aged 76; died, October 14.

Estus Leon Summers, Hattiesburg, Miss.; Memphis (Tenn.) Hospital Medical College, 1907; aged 52; died, October 5, of hypertrophic cirrhosis of the liver.

Howard A. Long, Brickerville, Pa.; Baltimore Medical College, 1893; member of the Medical Society of the State of Pennsylvania; aged 61; died, September 14.

John H. Kiley, Blossburg, Pa.; Starling Medical College, Columbus, 1886; member of the Medical Society of the State of Pennsylvania; aged 72; died, October 2.

Harry M. Weed, Watersmeet, Mich.; Chicago Homeopathic Medical College, 1889; aged 72; died, October 10, in Rhinelander, Wis., of cerebral hemorrhage.

William T. Lovering ✠ Seattle; McGill University Faculty of Medicine, Montreal, Que., Canada, 1891; aged 65; died, September 20, following an appendectomy.

Charles Henry Wilkinson, Denver; Cleveland University of Medicine and Surgery, 1897; aged 65; died, October 7, in St. Anthony's Hospital, of carcinomatosis.

George Sewell Clark, Hartwell, Ga.; Atlanta College of Physicians and Surgeons, 1899; formerly chairman of the board of education; died, September 25.

Henry F. Spillers, Dover, Ark. (licensed, Arkansas, 1903); formerly superintendent of the Ohio Valley General Hospital, Wheeling; aged 53; died, September 8.

E. W. Dunn, Ferris, Texas (registered by Texas State Board of Medical Examiners under the Act of 1907); aged 64; died, in October, of heart disease.

Lewis Henry Ferris ✠ Melbourne, Iowa; State University of Iowa College of Medicine, Iowa City, 1912; aged 52; died, September 16, of multiple myeloma.

William W. Pritchard, Wichita, Kan.; University of Nashville (Tenn.) Medical Department, 1868; Civil War veteran; aged 93; died, September 6.

James William Watts, Columbus, Ohio; Medical College of Ohio, Cincinnati, 1880; aged 78; died, October 12, in a local hospital, of carcinoma of the face.

Lyman G. Hemenway, Sycamore, Ill.; Bennett Medical College, Chicago, 1877; member of the Illinois State Medical Society; aged 80; died, October 5.

Lonam Samuel Johnston, Shreveport, La.; University of Pennsylvania School of Medicine, Philadelphia, 1907; aged 59; died, June 11, of angina pectoris.

Harris R. Moore, Burlington, N. C.; Atlanta (Ga.) College of Physicians and Surgeons, 1899; aged 60; died, September 30, in the Rainey Hospital.

John H. Fritz, West Alexandria, Ohio; Eclectic Medical Institute, Cincinnati, 1881; aged 81; died, October 18, in St. Elizabeth's Hospital, Dayton.

Edwin Adolphus Gillespie, Memphis, Tenn.; Vanderbilt University School of Medicine, Nashville, 1880; aged 77; was found murdered, October 12.

Webster C. Montgomery, McLean, Texas; Atlanta (Ga.) Medical College, 1895; formerly city and county health officer; aged 67; died, October 4.

Charles Percy M. McCall, Jr., Reidsville, Ga.; University of Nashville (Tenn.) Medical Department, 1904; aged 53; was found dead, July 23.

Cornelius Wesley Hickman, Houston, Texas; Eclectic Medical Institute, Cincinnati, 1884; aged 78; died, September 30, of heart disease.

Daniel Buchanan, Galt, Ont., Canada; University of Toronto Faculty of Medicine, 1896; aged 64; died suddenly, September 7, in Detroit.

Clarence Joseph Beekley, Cincinnati; Miami Medical College, Cincinnati, 1901; served during the World War; aged 54; died, September 11.

Lilburn Walter Huddle ✠ Rural Retreat, Va.; Tennessee Medical College, Knoxville, 1907; aged 54; died, October 1, of cerebral hemorrhage.

Robert Merritt Charlton, Hamilton, Ont., Canada; Western University Faculty of Medicine, London, 1906; aged 56; died, September 4.

Rufus Edwin Hagerthy, Sedgwick, Maine; Long Island College Hospital, Brooklyn, 1885; aged 74; died, September 3, of diabetes mellitus.

Frederick Kilburn Priest, Nashua, N. H.; University of the City of New York Medical Department, 1882; aged 73; died, September 28.

Gordon Way Hoyt, Syracuse, N. Y.; Hering Medical College, Chicago, 1896; aged 60; died, October 8, of streptococcic meningitis.

Noah Myers, Springfield, Ohio; Medical College of Ohio, Cincinnati, 1887; aged 74; died suddenly, October 13, of cerebral hemorrhage.

Roy Leon Chambers ✠ Sardinia, Ohio; Starling-Ohio Medical College, Columbus, 1909; aged 48; died, October 16, of heart disease.

Vestus E. D. Casselman, Vancouver, B. C.; Canada; Manitoba Medical College, Winnipeg, 1897; aged 63; died, September 16.

Warren Edward Hillyer, Boulder, Colo.; Keokuk (Iowa) Medical College, 1898; aged 61; died suddenly, October 14, of heart disease.

Alfred E. Long, Vancouver, B. C., Canada; University of Pennsylvania School of Medicine, Philadelphia, 1882; aged 84; died, July 26.

Roger Sherman Tea, Lafayette, Ind.; Rush Medical College, Chicago, 1886; aged 75; died, October 2, of cerebral hemorrhage.

George H. Mathews, Union Springs, N. Y.; Baltimore Medical College, 1884; aged 88; died, July 21, of chronic endocarditis.

Jesse Bell Holt, Culver City, Calif.; Woman's Medical College of Pennsylvania, Philadelphia, 1884; aged 75; died, July 16.

William Jenkins Fernald, Ontario, Calif.; Rush Medical College, Chicago, 1890; aged 69; died, in October, of heart disease.

George Robert Connally, Wichita Falls, Texas; nongraduate; aged 80; died, July 23, of cholecystitis.

Bureau of Investigation

BEER AND ALCOHOL

Some Alcoholic Percentages in Beers on the American Market

The passage this spring of an act to provide revenue by the taxation of beer and the coincident repeal of certain paragraphs in the National Prohibition Act so as to permit the legal manufacture and sale of beer containing not more than 3.2 per cent of alcohol by weight have stimulated public interest in the subject of alcohol percentages in American beers. At the time the act was passed it was freely stated, and the claim is still heard, that beer containing 3.2 per cent of alcohol by weight (which is about 4 per cent by volume) must be a pretty "weak" affair, and in no way comparable to the general run of beers legally sold in the United States prior to the adoption of the Eighteenth Amendment to the Constitution. It has also been suggested that the "new" beer does not even contain the amount of alcohol that the modification of the law permits—in other words, that the beer put on the American market does not contain 3.2 per cent of alcohol by weight. This rumor is given further weight by the fact that the declaration of alcohol content, which the National Food and Drugs Act requires, does not state: "Contains 4 per cent of alcohol by volume," but instead, more ambiguously declares: "Contains not more than 4 per cent of alcohol by volume."

In view of the vagueness in the public mind—not wholly confined to the nonmedical part of the public—regarding the alcohol content of beverages, it may be of interest to call attention to certain fundamentals underlying the problem. At the outset, it is to be remembered that the National Food and Drugs Act requires the declaration of the presence and amount of alcohol in all drugs and beverages containing that substance. The law further requires that such figures shall be expressed in percentages by volume—not by weight—and also in percentages of *absolute* alcohol. This fact should be borne in mind, because in Canada and Great Britain the alcohol content of beverages is usually declared in terms of proof spirit, which is one half the strength of absolute alcohol. Thus the beers legally sold in taverns in the Province of Ontario and advertised as "4% by volume" are, if expressed in the terms required by our Food and Drugs Act, actually 2 per cent by volume.

The reason the new law uses weight instead of volume as the unit of alcoholic strength is probably to be explained on political and psychological grounds. Those desirous of legalizing the manufacture of beer containing a higher percentage of alcohol than the one-half of one per cent designated under the National Prohibition Act were undoubtedly aware of the ignorance of the general public of the differences between percentages by weight and percentages by volume. It might have been more difficult to get the necessary legislation to permit the manufacture of beer containing 4 per cent of alcohol by volume than it was to get the same legislation to permit the making of beer containing 3.2 per cent of alcohol by weight—although, as a matter of fact, the latter represents a slightly higher percentage of alcohol than the former. The following alcoholometric table, from 1 per cent to 10 per cent by volume, taken from the United States Pharmocopeia, will give some idea of the differences between percentages by volume and percentages by weight:

ALCOHOL BY VOLUME		ALCOHOL BY WEIGHT
1 per cent	=	0.795 per cent
2 per cent	=	1.593 per cent
3 per cent	=	2.392 per cent
4 per cent	=	3.194 per cent
5 per cent	=	3.998 per cent
6 per cent	=	4.804 per cent
7 per cent	=	5.612 per cent
8 per cent	=	6.422 per cent
9 per cent	=	7.234 per cent
10 per cent	=	8.047 per cent

Prior to the national prohibition law, the better known American lager beers declared the presence of between 3.5 and 4.5 per cent absolute alcohol by volume. Bringing the facts down to date, there is published by the New Hampsire State Board of Health, in its *Monthly Bulletin* for October, this year, a list of beers, the sale of which has been legalized by that state, together with the percentages of alcohol found by recent analyses to be in such beers. The following products and figures are taken from the New Hampshire *Bulletin*. In some instances more than one analysis was made, with slightly varying results. In such cases, instead of giving the individual alcohol percentages by volume in each analysis, the figures given have been averaged:

	Alcohol per cent by volume
Banquet Ale (Narragansett Brewing Co.)	4.00
Bass' Ale (Read Bros., Ltd.)	3.82
Blue Ribbon (Premier-Pabst Corp.)	3.88
Boston Stout (Commercial Brewing Co.)	3.55
Budweiser (Anheuser-Busch, Inc.)	3.84
Burgomaster (Fitzgerald Bros. Brewing Co.)	3.57
Connecticut Valley Ale (Connecticut Valley Brewing Corp.)	3.96
Connecticut Valley (Connecticut Valley Brewing Corp.)	3.89
Dawson's Diamond Ale (Dawson's Brewery, Inc.)	3.84
E. B. C. Portsmouth Ale (Eldredge Brewing Co., Inc.)	4.10
Edelbrau German Lager (Edelbrau Brewing Co.)	3.86
Genesee (Genesee Brewing Co.)	3.34
Gilt Edge Stock Ale (Cold Spring Brewing Co.)	3.64
Golden Rod Lager (Hittleman Golden Rod Brewing Co., Inc.)	3.80
Gold Medal (Munich's Brewery, Inc.)	3.79
Gold Medal (Stegmaier Brewing Co.)	3.64
Haffenreffer's Lager (Haffenreffer & Co.)	3.94
Hampden Ale (Hampden Brewing Co.)	3.92
Hampden Lager (Hampden Brewing Co.)	3.63
Horton Pilsener (Horton Pilsener Brewing Co., Inc)	3.66
Harvard Draft Lager (Harvard Brewing Co.)	3.64
Heineken's Dutch (Heineken's Breweries)	3.57
Heineken's Lager (Heineken's Breweries)	3.46
High Life (Miller Brewing Co.)	3.84
King's (King's Brewery, Inc.)	3.49
King's Special Ale (King's Brewery, Inc.)	3.61
Liebotschaner (Genesee Brewing Co.)	3.84
Liberty (American Brewing Co.)	3.98
Michel Pilsener (Michel & Ebling Brewing Co.)	3.72
Narragansett Lager (Narragansett Brewing Co.)	3.52
Old England Ale (Old England Brewing Co.)	3.93
Old Heidelberg (Harrison Beverage Co., Inc.)	3.39
Old Heidelbrau Pilsener (Union City Brewing Co.)	2.97
Old Homestead Ale (Commercial Brewing Co.)	3.71
Ortleib's Lager (Henry F. Ortleib)	3.29
Paramount (North American Brewing Co.)	3.69
Pickwick Ale (Haffenreffer & Co.)	3.80
Pico Pilzner (Pilzner Products Co., Inc.)	3.74
Piel's Dark Lager (Piel Bros., Inc.)	3.85
Piel's Light Lager (Piel Bros., Inc.)	3.88
Rheingold (Liebmann Breweries, Inc.)	3.73
Schlitz (Schlitz Brewing Co.)	3.36
Seitz (Seitz Brewing Co.)	3.42
Standard (Standard Brewing Co.)	3.49
Stegmaier's Porter (Stegmaier Brewing Co.)	3.35
Stegmaier's Select (Stegmaier Brewing Co.)	3.63
Stegmaier's Stock Lager (Stegmaier Brewing Co.)	3.66
Tip Top Lager (Trainer Brewing Co.)	3.80
Utica Club Brew (West End Brewing Co.)	3.68
Wehle Ale (Wehle Brewing Co.)	3.20
Wehle Lager (Wehle Brewing Co.)	3.56
Whitbread Pale Ale (Whitbread & Co., Ltd.)	3.87

The analyses of these fifty-two brands show the average alcoholic strength to be 3.68 per cent by volume.

An Ultramicroscopic Living Thing.—Yellow fever is caused by a virus, an ultramicroscopic living thing that has never yet been seen. Able to pass through the closest of filters, it has been known to penetrate the skin of a man's hand and infect him with the disease. Despite this penetrative power, the disease is not ordinarily acquired by contagion, being, like many other diseases, spread through the agency of an insect host. The host, a mosquito, bites an infective man and twelve days later becomes infective itself and remains so for the remainder of its life, which may last for some months. At any time during its infective period, the mosquito has only to bite a human being once for the virus to be passed back from its insect to its human host, and for the disease to spread. —Still, John: The Significance of Yellow Fever, *J. Royal Army M. Corps* **61**:268 (Oct.) 1933.

Correspondence

MALNUTRITION IN CHILDREN

To the Editor:—I have just read your editorial, October 21, on malnutrition in children. Since the Washington meeting, October 6, I have been looking into this question in the dispensary and children's wards of the Philadelphia General Hospital, where I find from records of social workers and dispensary physicians, and in my wards, that there is distinctly less malnutrition in children than there was in much better times. So far, there has been only one true case of malnutrition in the wards this month, which is distinctly unusual.

Most of our patients come from homes that are being supplied with food from different agencies in the city, and my feeling is that the children are getting much more nourishing food than they had obtained when the parents were self supporting and supplying much unnessary and faulty foods. In my own practice I have not seen any cases of malnutrition, even when the parent or parents have been out of work or had only enough work to supply the absolute necessities of life. I feel that it is entirely wrong to make so much hullabaloo about something which does not exist.

Theodore LeBoutillier, M.D., Philadelphia.

ABORTIONS IN RUMANIA

To the Editor:—I was greatly surprised to read in the Bucharest letter (The Journal, September 2, p. 792) that the number of abortions registered in statistics is about 60,000 a year. I will not discuss the figure, although my associates and I are the only ones in Rumania who could be well aware of the actual number. I have no idea as to the number of abortions that take place here. Two expressions of a contradictory nature—"secret abortions" and "late statistical reports"—are used by the correspondent.

The causes of death registered according to the International List give the following data for 1931 and 1932:

	Total Deaths in Rumania	Number of Females Between 14 and 45 Years, Dying from All Causes	Total Female Deaths from "Puerperal Causes"
1931	380,251	30,543	2,389
1932	399,346	28,653	2,889

S. Manuila, M.D., Bucharest, Rumania.
Director of the Institute of Demography and Census.

SPRAY RESIDUE POISONING FROM STRING BEANS

To the Editor:—Spray residue poisoning, in man, occurs with some frequency. A recent instance in San Francisco is worthy of note:

Mrs. M., a housewife, served a meal consisting of string beans, summer squash, boiled rice, dried cooked peaches, and, to one individual only, broiled steak. Seven people, including three children of 10, 6 and 2 years, and four adults were served. Mrs. M. was the only one affected, but also she was the one of the group who ate an additional portion of the string beans, an incident occurring about one hour after the meal. Physical signs and symptoms complained of included nausea, vomiting, diarrhea, headache, abdominal pain, and "dark spots before the eyes." The disturbance endured through three days for forty-eight hours.

Samples of the beans were obtained from the market and were prepared in the same aluminum vessel as before, and chemical studies revealed lead to the quantity of 11.7 mg. (0.0117 Gm.) per hundred grams of beans, but no arsenic. Three other samples from the market showed no lead or arsenic. Quantities of the beans sold were procured by the market from two different sources on two successive days, so that it was impossible to trace the responsible lot.

From the amount of insecticides sold per capita annually, it would appear that relatively enormous quantities are used. Heavy spraying might easily permit the quantity of residue to exceed the rather wide margin of safety for human consumption. The possibilities are minimized, of course, by the supervision offered by the Bureau of Entomology and Plant Industry of the United States Department of Agriculture and by state departments of agriculture. It is to be remembered, however, that the uninformed truck farmer, to insure an effective dose of insecticide, may spray his vegetables heavily. If the housewife is not extremely cautious in washing the spray residue from the vegetables before cooking, a case of poisoning may easily result.

J. C. Geiger, M.D., San Francisco.
Director of Public Health.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

HYPERHIDROSIS, OR EXCESSIVE PERSPIRATION

To the Editor:—A youth, aged 19, height 5 feet 8 inches (172.7 cm.), weight 152 pounds (69 Kg.), of normal bodily development, complains that for the past four years he has been bothered with excessive perspiration. Irrespective of the surrounding temperature, winter or summer, he perspires so freely that his clothing becomes soaked through in a short while. It has become so severe that it practically bars him from any form of social activity, such as dancing, unless he was to change his clothing several times during an evening. He drinks large quantities of water. The perspiration is generalized over the body surface, head and scalp. The past history and physical examination are entirely negative. He has an older sister, aged 28, with diabetes mellitus. Routine blood examinations and urinalysis are within normal limits. The Kahn and Wassermann tests of the blood are negative. His only other complaint is an occasional frontal headache. A course of several intramuscular injections of solution of pituitary produced no appreciable effect on the thirst or perspiration. The patient is becoming quite despondent over the situation and is willing to try any measures to check this condition. Kindly omit name.

M.D., Illinois.

Answer.—Many of the causes of generalized hyperhidrosis can be ruled out in this case by the description given, but a few remain as possibilities. Malaria, hyperthyroidism, hyperglycemia, persistent, nonprogressive brain lesion or a neurosis based on fear may be considered.

Periodicity in the attacks would suggest malaria. Hyperthyroidism should have produced symptoms recognizable in the general examination. If any suspicion of this disorder can be entertained, an estimation of the basal metabolism should be made. Evidence is wanting of direct causation of hyperhidrosis by disturbances of the pituitary gland, but excessive sweating occurs at times in gigantism, probably from the accompanying hyperthyroidism. Hyperglycemia, too, may be secondary to pituitary disease. Urinalysis should be repeated and the blood sugar estimated before it can be excluded.

Hyperhidrosis has often been reported in cases of dementia paralytica, myelitis, injury or tumor of the brain. In spite of the fact that the condition has been present for four years without causing any other symptom, this possibility should be ruled out by careful examination, including examination of the eyegrounds. There have been a number of cases of self-limited general hyperhidrosis reported in which no etiologic factor could be found. The theory has been offered that they were due to a temporary vasomotor disturbance in the corpus striatum or hypothalamus consequent on some infective process.

If no etiology can be discovered, empirical treatment might well be instituted by putting the patient in the hospital, cutting down water and salt to the minimum, and recording the amount of perspiration. It must be remembered that the loss of water and salts in the sweat causes hypochloremia, so that the hyperhidrosis patient needs more salt than a normal person. If this does not break the cycle, the remedy most likely to give relief is atropine, administered in increasing doses until the desired effect is obtained or signs of intolerance appear.

An old wives' remedy, sage tea, is recommended by good German authority as having succeeded in some cases. It must

be given in large amounts, and after it has been used for several weeks it should be stopped for a few days to prevent loss of effect and then resumed. Other authorities report success for sulphur in doses of 4 Gm. morning and evening. Still others report good results from camphor in pills coated to prevent solution in the stomach. Other patients have been benefited by iron, some by ergot, a number by arsenic.

The use of external applications is sometimes indicated as an adjuvant. One per cent solution of liquor formaldehydi in water is the most generally useful. One per cent alcoholic solution of quinine has succeeded in some cases, probably those resulting from malaria.

DWARFISM

To the Editor:—A boy was brought to my office a few days ago with, I believe, some type of glandular disturbance, possibly an insufficiency of the anterior pituitary. The child is now 13 years old, height 45 inches (114 cm.) and weight 48 pounds (22 Kg.). He was a full term baby, born after a long labor with forceps delivery, and weighed 5 pounds (2.3 Kg.) at birth. He was breast fed until 18 months old. He cried a good deal until he was about 3 months old. He was apparently a normal child, according to his mother, until he was 4 years old and then he just seemed to stop growing. There is no history of convulsions or illness of any kind in early infancy. He had measles four years ago, mumps three years ago and acute bronchitis one year ago. There is nothing in the family history of importance. There is one other child in the family, a girl of 10 who is apparently normal and in good health. There is no one on either side of the family of small stature. Physical examination is negative except for his stature. The size of his chest and abdomen is possibly a little out of proportion to the remainder of his body. He appears to be thick and fat through the chest and abdomen. Otherwise the relationship in size between the head, extremities and trunk is normal. There is apparently no disturbance in the secondary sex characteristics. His progress in school has been satisfactory and there is apparently no mental retardation. Can you offer any suggestion as to the possible diagnosis and is there any glandular therapy that might prove of value in this case? Can you give me any reference to the literature? Please omit name and address.

M.D., Texas.

ANSWER.—The history of this case and an examination of the photographs submitted suggest dwarfism. The patient described in the query progressed normally until he was 4 years old and then ceased growing. This type has been referred to as the infantile variety. Growth continues for a certain period and ceases some time between childhood and puberty. Such an individual may become a man in miniature. Paltauf in 1891 called attention to another variety, the primordial type of true dwarfism. These are congenital dwarfs. They may take on growth acceleration in adult life. Thus, it is recorded by Paltauf that two dwarfs increased in height as late as their thirtieth year. In most of the cases belonging to the primordial group, the intelligence remains normal. The etiology is obscure, though retardation in development of the epiphyses persists and seems in some way to be associated with the failure to grow.

Pituitary preparations have been employed to a considerable extent in the treatment of dwarfism. It is difficult to say whether observations of accelerated growth are due to pituitary medication or are simply spurts in growth, which take place even in untreated cases. It has been suggested that, if results are to be obtained, large doses of the preparations should be used—as much as from 2 to 4 Gm. a day.

In several laboratories the growth fraction of pituitary extracts in concentrated form have been isolated; thus, Shelton of Santa Barbara has recently treated a midget by giving Evan's growth hormone hypodermically.

A discussion of dwarfism may be found in any of the recent textbooks on medicine or pediatrics and it is also considered in Englebach's Endocrine Medicine, published by Charles C. Thomas in 1932, R. G. Hoskin's The Tides of Life, published by W. W. Norton & Co. in 1933, and W. Falta's Endocrine Diseases, translated by M. K. Meyers in 1923.

WATER HEMLOCK POISONING

To the Editor:—In THE JOURNAL, September 9, there is a clinical report of a case of water hemlock poisoning by Dr. M. M. Miller of Akron, Ohio. I have a vague recollection that several years ago THE JOURNAL published the experience of a physician in the management of a large number of victims of intoxication by the same plant in a public institution for children. As young persons seem to be the common victims of innocent eating of the widespread Cicuta genus, I opine that other readers would be glad, like myself, to have references to the subject.

M.D., Connecticut.

ANSWER.—The communication to which our correspondent doubtless refers was a report of seventeen cases of poisoning with water hemlock (Cicuta maculata) published in some detail by the late Prof. Louis A. Gompertz, M.D., of the Yale University School of Medicine (THE JOURNAL, Oct. 16, 1926, p. 1277). It dealt with a group of boys, inmates of a county home, who had been taken suddenly ill after partaking of the leaves or flowers and, in a few instances, of the roots of water hemlock growing in a swamp adjoining the children's playground. All those who had eaten root stocks became ill, with accompanying convulsions. The symptoms otherwise resembled those described by Miller. All of Dr. Gompertz's seventeen patients recovered. The treatment consisted of gastric lavage and high enemas. After the stomachs of all were evacuated it became necessary, in some instances, to administer morphine hypodermically. Active purgation was initiated in each child. Otherwise, they were treated symptomatically. Dr. Miller employed sodium amytal, 0.2 Gm., administered intravenously, to overcome the alarming convulsions.

Extensive references to the literature of poisoning with Cicuta will be found in Dr. Gompertz's paper. It is evident that water hemlock is highly poisonous at all times. The problem of prevention emphatically presents itself. Attention should be called to the widespread menace of the plant. Eradication procedures ought to be inagurated so thoroughly in all neighborhoods where children, the usual victims, are likely to play that the future possibility of poisoning by Cicuta maculata will be reduced to a minimum. Its habitat is among swamps; frequently it is found along irrigating ditches and wild meadows.

ENCEPHALITIC PARKINSONISM

To the Editor:—I have a patient who suffered from epidemic (lethargic) encephalitis about ten years ago. Since his recovery he has been suffering from paralysis agitans. Two years ago he came to me for treatment and I gave him tincture of stramonium, 10 drops, three times daily. This dosage had to be increased to 30 drops and even more. I stop this treatment for intervals of two weeks, but he seems to have developed such a tolerance for the drug that even more than 30 drops three times daily does not seem to help. Kindly let me know whether there is anything new that could be used. His age is 28 years.

SAMUEL ZEAVIN, M.D., Austin, Manit.

ANSWER.—It is difficult to recommend something new when none of the new remedies recommended for encephalitic parkinsonism are as good as stramonium, atropine and scopolamine hydrobromide. The latter is usually the most efficient drug. It is well to begin with 0.3 mg. three times a day and gradually increase the dose as needed. In addition to this a course of intravenous injections two or three times a week for a month or two of sodium cacodylate may be beneficial. It is well to begin with 0.3 Gm. and gradually increase the dose to 1.3 Gm. If the scopolamine should prove ineffective, it would be safe to increase the dose of tincture of stramonium to double the amount stated. The powdered leaf in capsule may be more effective, beginning with 0.13 Gm. three times a day.

ACCUMULATION OF TARTAR ON TEETH

To the Editor:—What causes an excessive accumulation of tartar on the inside of the lower front teeth, which returns soon after prophylaxis? A man, aged 40, has chronic tuberculosis of long standing. He has obstinate constipation, for which he has taken psyllium and a daily dose of two teaspoonfuls of magnesia magna for several years. There is no apparent lack of salivary secretion. Nearly all the teeth are present, apparently in good repair. He is a mouth breather. A reply will be appreciated.

M.D., North Carolina.

ANSWER.—Some authorities believe that from 90 to 95 per cent of all pyorrhea can be regarded as a filth disease. The small minority is of constitutional origin. In evolution, man has lost the art of vigorous mastication; a diet has been adopted that is for the most part made up of soft foods. If foods were hard and tough, the teeth would be cleansed and the gums vigorously massaged or stimulated during mastication. Since cleansing and massaging are not automatic now, it becomes necessary to supply both artificially. As a result, proper brushing of the teeth has become an important function. This fact is little appreciated by the dental profession as a whole; therefore it is not emphasized to the lay public. Unless much attention is given to the gums during tooth brushing, they become soft and spongy and as a result fit loosely about the necks of the teeth. Under such conditions it is not surprising to find tartar collecting on the necks of the teeth. Tartar is the result of the calcification of organic matter deposited on the teeth. It always consists of desquamated epithelial cells of the mouth mucous membrane, food débris, mucin of the saliva and various micro-organisms of the mouth. In the beginning the formation consists of a soft film of these substances; these can easily be brushed away if done thoroughly and regularly every day. If this is neglected, the film hardens and becomes calcified by the inorganic salts of the saliva. Chemical analysis shows considerable variability in the composition; the following figures are a fair average: calcium phosphate, 70 per cent; calcium carbonate, calcium fluoride and magnesium phosphate,

10 per cent; water and organic matter, 20 per cent. Hard tartar contains a much higher percentage of inorganic salts, soft tartar a higher percentage of organic matter and water. The tendency to tartar formation varies with individuals, also with age. The soft type predominates in youth and the hard type in older persons.

The accumulation of tartar can be controlled effectively by proper brushing. A thorough prophylaxis by a dentist is of limited benefit to the patient unless he knows how to follow up this service. There are two good reasons why tartar accumulates more readily on the inside of lower teeth than anywhere else: First, this is the most difficult location to brush; second, the sublingual and submaxillary glands are closest to these surfaces. If equally poor brushing were done on all other tooth surfaces, much tartar would gather there also.

The recommendation is that the patient acquire two good hard bristle tooth brushes and learn how to use them. By alternating morning and night, the bristles have more time to dry out. Proper brushing essentially constitutes a vibrating motion with pressure rather than a long stroke motion which results in nothing more than brushing the high spots. Cleaning agents are aids only if used in conjunction with a thorough brushing technic. Tooth pastes do not as yet possess the magic properties that some advertisers would have us believe.

INSULIN AND UNDERWEIGHT

To the Editor:—I have under my care a woman, aged 20, who is about 30 pounds (13.6 Kg.) underweight. She tried all sorts of tonics but could not gain. Physical examination is entirely negative except for the underweight. I put her on insulin, 5 units, three times a day. At first she responded to this treatment by getting hungry about thirty minutes after the injection, but after five or six days this dose ceased to have any effect at all. The dose was then increased to 10 units three times a day. For the first few days she used to get hungry about thirty or forty minutes following the injection; later the interval between the injection and the onset of hunger was prolonged to about eighty or ninety minutes, and finally this dose failed to produce any hunger at all. I then started her on 20 units three times a day and for the first two or three weeks she reacted favorably by getting hungry, but not until about ninety minutes following the injection. I now find that I have to give her at least 30 units in order to produce a hunger sensation, and that only after eighty or ninety minutes. Kindly answer the following questions: Do you consider such a long interval between the time of injection and the onset of hunger unusual? Do patients become tolerant to insulin, and require larger doses when treatment is prolonged? 3. Is 30 units three or four times a day harmful in any way? 4. In the event that 30 units will soon fail to produce a hunger sensation, would you advise increasing the dose to 40 or 50 units three times a day? 5. During the three months that she has been under insulin treatment she gained 14 pounds (6.4 Kg.) without discontinuing her work as an office clerk. Is this the usual rate of gain in weight? What is the optimum rate of weight gain? I shall greatly appreciate your courtesy in this matter. Please omit name.

M.D., New York.

ANSWER.—Hypoglycemia following the administration of insulin to normal persons usually reaches its lowest point in from two to three hours: The sensation of hunger coincident with the lowering of the blood sugar, although it may supervene when the blood sugar level has fallen as little as 10 mg. per hundred cubic centimeters, may be delayed until the sugar has approached its lowest levels.

The lowering of the blood sugar level evokes compensatory reactions within the organism which involve the utilization of the stored glycogen as a source of sugar with which to replenish the blood. In the undernourished person, in whom the compensatory mechanisms are hampered by lack of sugar stores, the hypoglycemic action of insulin is more precipitous than in the well nourished organism. The apparent increasing resistance of the patient to insulin is probably due to the improvement in her nutrition as a result of treatment. In the absence of complications such as infection, diabetic patients receiving insulin over long periods do not develop any resistance to insulin.

The possible harm that might result from continued insulin administration in a normal person con be surmised only from certain theoretical considerations and, for the present at least, may be neglected. However, the increase in weight that occurs during insulin therapy is chiefly due to an increase in the food intake. Although water retention accounts for some of the gain in weight and while certain investigators have ascribed some of the benefit derived from insulin to its influence on the intermediary metabolic processes, the rationale of the treatment is mainly to improve the feeding habits. Since this patient has been receiving insulin for more than three months, which should be a long enough period in which to establish improved feeding habits, there seems little purpose in continuing the administration of increasing doses of insulin. Once a normal food intake has been established, there is no more reason for inducing extreme hunger reactions at mealtime in such patients than in normal individuals. In view of this and since most workers have not used more than 20 units of insulin three times a day in this work, it would seem advisable to discontinue the insulin in this case and observe what lasting effects have been obtained with it. It can be resumed later if necessary.

As compared to the experience of others, the gain of 14 pounds in three months is not excessive. Greater increases have been reported.

CONTAGIOUS AND INFECTIOUS DISEASES

To the Editor:—Please distinguish between contagious and infectious diseases; give definitions, also examples with reasons. If smallpox is a contagious disease, why is it not infectious? If malaria is infectious, why is it not contagious?

THOMAS S. FLEMING, M.D., Moberly, Mo.

ANSWER.—The only distinction between contagious diseases and other infectious diseases lies in the manner in which the infecting agents are transmitted. Contagious diseases are infectious diseases that are spread to susceptible persons through contact with specific infectious material without the intervention of an intermediary host in which the infectious agent may undergo certain changes or stages in development. Smallpox, chickenpox, gonorrhea, syphilis, scarlet fever, measles, mumps, diphtheria, whooping cough, epidemic meningitis, puerperal fever, erysipelas and pneumonia are all examples of contagious diseases in this sense, and they are all infectious diseases. Smallpox is an infectious disease. But not all infectious diseases are contagious in the sense just stated. Malaria, yellow fever, trypanosomiasis and Rocky Mountain spotted fever are not transmissible by simple contact with specific infecting material. These diseases are transmitted by the bite or sting of insects that carry the infecting agent and deposit it in virulent form in the tissues or blood of the victims. It is true that these diseases are communicable diseases, but not by simple contact; hence they are not contagious.

NECROSIS OF FATTY TISSUE AFTER HYPODERMOCLYSIS

To the Editor—In January I saw a patient who had been having convulsions for several hours. A woman at full term was in a state of coma with elevation of blood pressure and pathologic kidney: the typical picture of advanced eclampsia. I advised cesarean section immediately, as she was at full term, a primipara, 34 years old, and fetal heart sounds could be heard. A twin pregnancy was found, a boy and a girl. The boy seemed to have been dead for several hours, but the girl came through in good condition. The patient left the operating table in fair condition. A hypodermoclysis was ordered on her return to her room. My personal contact with the case terminated at this point for a period of several weeks. I understand that a hypodermoclysis of 5 per cent dextrose in physiologic solution of sodium chloride was given immediately after her operation and repeated eight hours later. About six weeks following her operation the woman consulted me with reference to a painful condition on both sides of the chest wall. On the right side a fluctuation area was found just below and posterior to the level of the breast. Marked tenderness was found over the same area of the other side, but no fluctuation was found. I advised her to return to her local physician and consult him with reference to the matter, which she did. A few days later she came back to me and the same condition persisted. I made an opening just below and slightly posterior to the breast and several ounces of straw colored fluid was removed. I saw the woman over a period of several months and it became necessary to make numerous openings on both sides of the chest wall below and posterior to the breast and extending down to the level of the umbilicus. Always the same character of fluid was found. A straw colored, rather thick and sticky fluid was recovered but never at any time was pus found. The fluid was examined microscopically on numerous occasions and one culture was made, but both procedures were negative for organisms. The skin was never involved. The pathologic condition was confined to the superficial tissue between the skin and muscles of the chest wall. All symptoms finally cleared up about eight or nine months after operation and the patient is entirely well except for a hernia in the upper portion of the incision in the region of the necrosis. Some controversy has arisen with reference to this matter and I was asked for an opinion as to the cause of the necrosis. My idea was that it was simply a fatty necrosis as a result of the hypodermoclysis being given either too hot or too strong. I say this because the necrotic area involved only that portion of the chest wall which is supposed to have absorbed the hypodermoclysis. Also it was not the marked localized necrosis which is usual from overdistention of the tissues. Some expressions from you with reference to the causes of necrosis or any information you might give me would be greatly appreciated. Please omit name.

M.D., Mississippi.

ANSWER.—The inquirer is most likely correct in his assumption that the fluid was the result of necrosis of fatty tissue and that the necrosis was most likely due to the fact that the solution injected was too hot. De Lee (Year Book of Obstetrics and Gynecology by J. B. De Lee and J. P. Greenhill, 1925, p. 213) reports such a case. The absence of more local and general symptoms, the negative cultures and the fact that the necrosis was bilateral all speak against an infection. If epinephrine was added to the solution before it was injected, it may have caused the necrosis. Vignes (*J. d. praticiens,* Jan. 31, 1925) reports a case in which complete necrosis of the mammary

gland followed a submammary injection of serum. The entire breast separated from the chest wall without bleeding. Vignes believed the necrosis was due either to epinephrine or to the fact that the serum was too hot. He has seen a number of sloughs follow injection of epinephrine in pregnant women. He emphasizes that in gravid women there is hyperactivity of the suprarenal glands and that, when additional epinephrine is injected into the body, necrosis may result from excessive vasoconstriction in the area of injection. However, while this is most likely true, if only a small amount of epinephrine is used there is no harm, as evidenced by the fact that necrosis is rarely ever seen after the use of infiltration anesthesia. In practically all cases in which this form of anesthesia is used, some epinephrine is added to the anesthetic. In the case cited, the patient's resistance was lowered considerably by the eclampsia and this may have played a part in the necrosis.

BLOOD TRANSFUSION IN SHOCK

To the Editor:—What is the consensus as to the indication or contraindication of blood transfusion in a case of shock not due to hemorrhage? Recently there was a paper or an editorial in THE JOURNAL on shock in which this subject was discussed. Would you be kind enough to give me the reference? MARTIN M. SHIR, M.D., Brooklyn.

ANSWER.—Blood transfusion is indicated when, as a result of an operation or trauma or burns or uncomplicated hemorrhage, the blood pressure remains depressed definitely below its normal level. If the blood pressure has remained at a very low level for several hours as a result of any of these causes, the transfusion of blood may be without a sustained beneficial effect. The editorial on shock appeared in THE JOURNAL, January 7, page 46.

LATE EFFECTS OF TRICHINOSIS

To the Editor:—A man, aged 40, had a severe and typical attack of trichinosis in 1928. He had at that time an eosinophilia of 50 per cent. Some residual pains continued in the muscles of the extremities. Blood examination six months after the initial attack revealed an eosinophilia of 9 per cent. For more than four years there were no symptoms. Recent fleeting pains, at times very severe, have occurred in the extremities; at times these were associated with some transient swelling. The character of these disturbances has been very similar to what one would expect in a subacute phase of trichinosis and would be more readily so classified than in any other type of muscular, neuritic or joint problem. There is no fever at present and the blood picture is: hemoglobin, 75 per cent; red blood cells, 4,470,000; white blood cells, 9,500. The latter show 77 per cent neutrophils and no eosinophils. Do you feel that after this long free interval the present trouble can be attributed to the previous attack of five years ago? Please omit name. M.D., Illinois.

ANSWER.—The fleeting pains which the patient has in the extremities at the present time are probably not due to the trichinosis. The parasites soon develop a calcium capsule and from then on (while they remain in the muscle) do not cause any symptoms.

TYPHOID IN BIRDS

To the Editor:—I should like to know whether any experiments have been made on the feeding of typhoid to healthy and sick birds and pigeons. If such experiments have been made, would the germs after passing through the digestive system be infectious?

PAUL SERRE, Dixmont, Pa.

ANSWER.—Few experiments seem to have been done on this subject. The experimental study of chickens as possible typhoid carriers made by Mitchell and Bloomer (*J. M. Research* **31**:297, 1914) indicated that these birds could not be infected either by intravenous inoculation or by feeding. The feces of chickens fed with material containing typhoid bacilli over a period of nineteen days were subjected to daily bacteriologic examination but never showed the presence of typhoid bacilli. The apparent destruction of typhoid bacilli in the alimentary tract of chickens is in line with what has been observed when typhoid bacilli have been fed to certain mammals, as calves.

AMITOSIS

To the Editor:—What cells in the human body divide only by amitosis? Are there any cells that divide on some occasions by mitosis and at other times by amitosis? B. L. Knight, M.D., Cedar Rapids, Iowa.

ANSWER.—All observations on amitosis as a means of growth have been attacked because they are in conflict with the chromosome theory of inheritance. There is no evidence in man for cell growth of this type which meets the criticisms raised; adequate material is difficult to obtain and many pitfalls await the observer. Amitosis immediately followed by mitosis has been described in rapidly growing tissues of rabbit and pigeon embryos. In various mammals, evidences of amitosis have been found in developing connective tissue, cartilage, bone and muscle. There is no valid reason for doubting similar cellular phenomona in human development. Amitosis as a means of increasing nuclear surface is well established in the fetal syncytium of the human placenta. The binuclear cells in the human liver, in the stomach, in the outer layers of stratified epithelium and in cartilage as well as in some types of multinuclear cells are probably the results of direct nuclear division. In these cases, as in the polymorphonuclear leukocytes, the object would also seem to be an increase in the reacting surface.

"HAWKING"

To the Editor:—I am in search of a word to convey the action in which subjects suffering with drippings behind the nose get rid of this mucus from within the nose and drippings of the posterior fossae and subsequently expectorate them. The word is to convey that action which draws backward the mucus and the phlegm of the nasal channels and is expectorated. T. J. DIMITRY, M.D., New Orleans.

ANSWER.—The term "hawking" is the one most commonly used to describe the action of drawing down from the nasopharynx secretions lodged behind the nose. In some cases the same term is used to designate the act of dislodging mucus resting on or near the vocal cords, and then it is usually accompanied by a short cough-like explosive expiration.

USE OF PEPTONE ORALLY

To the Editor:—On page 730 of your issue of Aug. 26, 1933, under the title of Angioneurotic Edema, you suggest peptone orally as a possible treatment. Would not any protein by mouth provide peptone? The rationale of peptone parenterally is comprehensible to me, but peptone by mouth seems an idle gesture. If I am incorrect, will you kindly inform me as to my error? F. GREGORY CONNELL, M.D., Oshkosh, Wis.

ANSWER.—Peptone therapy in allergic conditions has been advocated for many years, especially by French and German writers. The references are too numerous to list. In 1916, Pagniez and Vallery-Radot (Etude physiopathologique et thérapeutique d'un cas d'urticaire géante; anaphylaxie et anti-anaphylaxie alimentaires, *Presse méd.* **24**:529 [Nov. 23] 1916) stated that the feeding of small amounts of the specific foods before the regular meal tended to desensitize the individual temporarily to that food. Even the small amounts of the food, however, were capable of producing allergic reactions, as noted by Urbach and others. Subsequently many workers, such as Urbach, Loeb, Vallery-Radot and Eiselsberg, began to use the specific peptones on the ground that in this way they could obtain temporary desensitization without fear of allergic reactions. Even earlier, nonspecific peptones had been employed orally. In the latter procedure, whenever there was a desirable effect it was presumably due either to the coincidence that the patient was actually sensitive to the protein from which the peptone was prepared or that the peptone represented one of the allergens to which the individual was sensitive and the desensitization to one protected partially against the others.

While the scientific evidence justifies but little confidence in the efficacy of peptone either orally or parenterally, in the discussion of the treatment of angioneurotic edema the use of this substance was suggested only after other more rational methods had been tried.

CABBAGE AND GOITER

To the Editor:—Is it positively proved that cabbage in any form is conducive to the formation of goiter? Also, is boiled cabbage more likely to do this in case it is true? Again, if true, is it possible that a goiter already present will be increased by the eating of cabbage occasionally? Please omit name. M.D., New Jersey.

ANSWER.—Chesney, Webster and Clawson (*Bull. Johns Hopkins Hosp.* **43**:261 [Nov.] 1928) were the first to show that rabbits fed on cabbage as the principal food develop goiter within two or three months and that with continued feeding of cabbage the goiter may grow to large proportions. This work has been confirmed by many workers, including Marine and Ivy.

It appears that cabbage grown in certain localities has goitrogenic properties, that the goiter is of the simple or endemic type as seen in man and that feeding iodine prevents its development but induces intense intoxication with a high basal metabolic rate and death when administered to such animals after the goiter has appeared. At necropsy the goiter of such animals is of the hyperplastic type. Steaming cabbage for thirty-minutes increases its goitrogenic properties.

It is believed that cabbage fed as the principal article of diet over long periods produces goiter by exhausting the iodine reserve and inducing a work hypertrophy of the thyroid.

It is entirely unlikely that goiter already present in a patient would be influenced materially by the occasional eating of cabbage. In the experimental animal goiter is induced only on a diet, principally cabbage, eaten over a long period. Curiously enough, this type of goiter may also be induced experimentally by other foods than cabbage.

EPINEPHRINE WITH POLLEN ANTIGENS

To the Editor:—Will you kindly tell if there is any method of administering hay fever antigen and a dose of epinephrine at the same time? I have a patient who has a relative who says she has had it that way. Please omit name.

M.D., New York.

ANSWER.—Epinephrine has been added to pollen antigens by many men in recent years and the two have been injected simultaneously. Epinephrine acts by slowing the speed of absorption of the pollen extracts and therefore causes local swelling rather than the uncomfortable and sometimes dangerous general reaction.

This method is, of course, most important in the more sensitive group of patients, and it is in this group that the addition of epinephrine is indicated, if it is advisable at all. By this procedure the dosages of pollen extract can usually be safely raised with each injection. However, it is obvious that, once started, epinephrine must not be stopped, else severe reactions are apt to occur. Duke uses both a tourniquet and epinephrine with his injections so as to lessen still further the chance of a general reaction.

The use of epinephrine in this way has some decided disadvantages. Pain occurs with the injections and is usually marked; and nervousness and palpitation are well known results of its use, though not so severe when small amounts of epinephrine are used. A great drawback lies in the fact that epinephrine when used over long periods tends to bring about a diminution in its effectiveness. The patient derives less and less advantage from its use. Unfortunately, too, these individuals are often the ones who develop pollen asthma, which may be so severe as to demand the injection of epinephrine. If the patient has already been given this drug over long periods he will probably fail to obtain relief at the time when he most needs it. And, lastly, it is not known how harmful the continued use of epinephrine is. It is possible that long-continued administration of the drug may be more injurious than is now believed.

For these reasons, most specialists in this field do not add epinephrine to their injections of pollen extract. Instead, they inject slowly and withdraw the needle a little so as to diminish the chance of an intravenous dose. The dosages are increased cautiously and never more than 50 per cent at a time. Local reactions call for repeated injections of the same amount until no soreness results and then amounts are increased slowly. A local reaction is a danger sign—if the next amount is stronger, disaster in the shape of asthma, hay fever or urticaria may ensue. In view of the enormous number of pollen extract injections, the percentage of fatalities is extremely small.

BURNING SENSATION ON PICKLING PEPPERS

To the Editor:—For the past several days women have been coming to the emergency hospital complaining of severe burning sensations of their hands following the pickling of red or green peppers. Many of the women state that this is the first time they have experienced this condition, although they have been pickling peppers for years. On examination of the hands, no definite pathologic picture is presented—there is no redness, swelling or increase in heat—merely the patient's statement of extreme burning. Because of this picture, a diagnosis of dermatosis due to pickling peppers has been made instead of dermatitis venenata. I have tried treating these cases with equal parts of glycerin and alcohol, similar to treating frost bites. This has proved unsatisfactory, the burning sensation persisting for hours after the application of the solution. Can you please explain the cause, what the proper diagnosis should be and if there is a specific treatment? Is there any literature? Kindly omit name.

M.D., Milwaukee.

ANSWER.—There has been found in the literature no reference to a burning sensation in pepper picklers; one housewife has, however, reported a temporary dermatitis of hands and face after cutting up fresh sweet peppers, and such cases are probably common, though not reported. Sweet peppers are a variety of capsicum, as is red pepper, which was formerly used in medicine as a counterirritant. The fact cited, that the picklers have never before experienced this sensation of burning, may be explained by assuming a difference in the variety of pepper grown this year, or, if the same variety was used, some difference in the method of cultivation or in the season, which has made them more pungent. Or there may be some difference in the other ingredients of the pickle, most of which can be classed as irritants. On the other hand, the picklers may have perspired more freely during the handling of the peppers, thus dissolving more of the irritant and rendering the skin more susceptible.

The particular irritant responsible for the burning sensation might be discovered by making patch tests; a very small cotton pledget soaked in the vinegar used is placed on the skin of one of the susceptible workers covered with a patch of oiled paper, oiled silk, gutta percha or sheet rubber, fastened with adhesive, and left in place for a few hours. Small pieces of pepper, the cut surface next to the skin, should be fastened on in the same way, the different tests being placed wide apart so that the burning sensation can be located. The tests should be of short duration, removed as soon as the sensation is distinctly felt. The risk of causing a patch of dermatitis should be taken into consideration.

Thorough washing with hot water and soap as soon as the working hours are over ought to be the best protection against the burning; though enough of the irritant may have been absorbed during the work to cause the sensation after work, in spite of thorough removal of the remainder. The use of rubber gloves or of forceps for handling the irritating substance would protect. A lotion composed of 50 per cent or stronger alcohol containing 1 per cent menthol might be helpful in counteracting the burning sensation. An appropriate name for the condition would be pepper picklers' paresthesia.

USE OF TRIBROM-ETHANOL IN PARKINSONIAN SYNDROME

In answer to a query on this subject (THE JOURNAL, September 23, p. 1021) the statement was made that "tribromethanol has been employed as a sedative in agitative mental cases, in which it has been used in the form of the commercial 2.5 per cent solution in doses of 0.1 Gm., repeated if necessary two or three times a day."

This statement was in error, since the dosage is always stated as milligrams per kilogram of body weight. One hundred milligrams per kilogram is at or near the upper limit of dosage for basal anesthesia and would provide complete surgical anesthesia in some cases. Such a dosage has been used to control convulsions, as in tetanus, but the recommendation for repetition of this large dose several times a day is hardly warranted without proper qualification. It would usually be quite unnecessary and even dangerous to repeat the full dose. Certainly 100 mg. per kilogram cannot be considered a "sedative" dose for use in Parkinson's syndrome. The solution is given rectally and the 2.5 per cent dilution is made from the commercial solution, which is 100 per cent (weight/volume) in amylene hydrate.

UNILATERAL ATROPHY OF THE BREAST

To the Editor:—In THE JOURNAL, September 30, page 1098, appeared a query on unilateral atrophy of the breast. A little elucidation may here be advisable. In doing physical examinations of the chest one frequently encounters some of the stigmas of tuberculosis, and atrophy of the mammae and of the nipples is often diagnosed as a symptom of tuberculous disease. In the male the nipple is found in the fourth interspace, generally, but with contraction of the chest subsequent to pulmonary tuberculous disease the nipple may be greatly displaced. The breast in the female modifies conditions depending on the size, and here usually one finds that the breast on the affected side is smaller and less developed than the breast over the still healthy side. Here the nipple itself is smaller and less normally developed and the areola is also smaller and less pigmented over the affected side. In the case quoted, of a woman, aged 23, after a thorough chest examination, a Mantoux test should be given with 1 mg. of old tuberculin. This, if positive, is followed by a careful examination of the right side of the chest and by a roentgenogram. This will clear up the problem as one of right-sided chronic, slowly developing pulmonary tuberculosis, when pulmonary tuberculosis was never suspected. Many cases of slowly developing, latent or hidden pulmonary tuberculosis with good resistance and with little or no fever and no pulse accentuation belong in this category.

JOHN RITTER, M.D., Miami, Fla.

HABITUAL ABORTION

To the Editor:—In THE JOURNAL, October 7, a correspondent requests information as to the cause of habitual abortion. It might be wise to call to his attention that undulant fever is a possible cause. I have one patient who aborted twice in whom I subsequently diagnosed undulant fever by means of the well known agglutination test. In the first instance there was a large area of calcification in the placenta and in the second the placenta was studded with necrotic areas full of decomposed blood clot. In neither instance was the organism Alcaligenes abortus isolated from the placenta, since the condition was not suspected. However, other cases are on record in which the abortion was proved to be due to Alcaligenes abortus infection.

HAROLD J. HARRIS, M.D., Westport, N. Y.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral.* New York, Dec. 15-16. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B Candidates).* The examinations will be held in various cities of the United States and Canada, Dec. 9. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: Cleveland, June 11. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Cleveland, June 11. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

CALIFORNIA: *Reciprocity.* Los Angeles, Dec. 6. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Endorsement.* Hartford, Nov. 28. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

DELAWARE: Wilmington, Dec. 12-14. Sec., Dr. Harold L. Springer, 1013 Washington St., Wilmington.

KANSAS: Topeka, Dec. 12-13. Sec., Dr. C. H. Ewing, Larned.

KENTUCKY: Louisville, Dec. 5-7. Sec., Dr. A. T. McCormack, 532 W. Main St., Louisville.

MARYLAND: *Regular.* Baltimore, Dec. 12-15. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examinations will be held at centers in the United States where there are five or more candidates, Feb. 14-16. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: Lincoln, Nov. 22-24. Director, Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NORTH CAROLINA: Raleigh, Dec. 4. Sec., Dr. B. J. Lawrence, 503 Professional Bldg., Raleigh.

OHIO: Columbus, Dec. 6-8. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

PENNSYLVANIA: Philadelphia, Jan. 2-6. Sec., Mr. W. M. Denison, 400 Education Bldg., Harrisburg.

TEXAS: San Antonio, Nov. 21-23. Sec., Dr. T. J. Crowe, 918-19-20 Mercantile Bank Bldg., Dallas.

WEST VIRGINIA: Morgantown, Nov. 16-18. State Health Commissioner, Dr. Arthur E. McClue, Charleston.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 16. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

LICENSING OF GRADUATES OF FOREIGN MEDICAL SCHOOLS

In February, 1933, at a meeting of representatives of the Federation of State Medical Boards of the United States, the New York Board of Regents, the National Board of Medical Examiners, the Council on Medical Education and Hospitals of the American Medical Association and the Association of American Medical Colleges, a committee was appointed to deal with the problem of graduates of European medical schools who may apply for licensure in the United States. The committee consisted of Dr. Harold Rypins, chairman, Dr. Walter L. Bierring, Dr. William D. Cutter, Dr. Fred C. Zapffe and Dr. Willard C. Rappleye. During the year members of the committee have held conferences with Dr. Edouard Rist representing the French government, Dr. Georg Kartzke representing the German ministry of education and Dr. Robert Alessandri representing Italy. A report of the committee was presented to the Association of American Medical Colleges meeting in Minneapolis, October 31. The committee reports as follows:

1. The number of native-born Europeans applying for admission to the medical licensing examinations in the United States is annually diminishing and the examinations appear to be serving as a barrier against the licensure of the incompetent.

2. At the present time the only European countries in which American medical students matriculating after March 1, 1933, will on the completion of their studies be eligible for admission to American medical licensing examinations are Italy and the British Isles.

3. There has been established a voluntary method for selecting and restricting American students for admission to the study of medicine in Italy, which is eminently satisfactory and should serve as a model for agreements with other European countries.

4. The joint action of the Federation of State Medical Boards of the United States, the Council on Medical Education and Hospitals of the American Medical Association, the Association of American Medical Colleges and the National Board of Medical Examiners has definitely decreased the number and improved the quality of American students studying medicine in Europe. It has undoubtedly raised the prestige of American medicine in Europe and will raise the reputation of European medical faculties throughout the United States and result in a mutual understanding between the medical profession in this country and in Europe.

The committee further recommends:

1. That no action be taken in reference to the admission of native-born Europeans for admission to American medical licensing examinations and that, so far as is consistent with the maintenance of high educational and professional standards, physicians who are victims of racial and religious persecution in Germany be permitted the privilege of practicing medicine in the United States.

2. That the voluntary method of selecting in this country students for admission to Italian medical schools serve as a model for similar agreements with other European countries and that a committee be appointed to advise and assist European authorities in reference to the selection of American students.

3. That the committee be continued with authority to carry on further negotiations with the various European authorities looking toward a proper selection and restriction of American students in Europe.

The committee also expressed its appreciation of the valuable cooperation of Prof. William C. MacTavish of New York University and of the sympathetic understanding of this problem by the representatives of the various European countries.

Georgia June Report

Mr. R. C. Coleman, joint-secretary, State Examining Boards, reports the written examination held by the Georgia State Board of Medical Examiners at Atlanta, June 14-15, 1933. The examination covered 10 subjects and included 100 questions. An average of 80 per cent was required to pass. Eighty-five candidates were examined, all of whom passed. Five physicians were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Yale University School of Medicine		(1932)	92.6
Howard University College of Medicine		(1932)	86.3, 88.9
Emory University School of Medicine		(1932) (1933)	89.7, 88.4, 88.7, 88.8, 88.8, 89.2, 89.4, 89.5, 89.5, 89.6, 89.6, 89.8, 90, 90.2, 90.5, 90.5, 90.5, 90.6, 90.6, 90.6, 90.7, 90.7, 90.7, 90.8, 90.8, 90.9, 90.9, 91, 91, 91.3, 91.3, 91.3, 91.8, 91.8, 92.2, 92.9, 93.5, 93.8, 94.1, 94.6
University of Georgia School of Medicine		(1932) (1933)	91.2, 86.2, 87.6, 88.4, 88.6, 88.6, 88.6, 88.8, 89, 89.4, 89.4, 89.7, 90, 90.1, 90.1, 90.2, 90.4, 90.5, 90.6, 90.6, 90.6, 90.8, 91.1, 91.2, 91.5, 91.5, 91.6, 91.8, 91.9, 92, 92, 92.3, 92.4, 92.9, 93, 93.6, 94.1, 95
University of Louisville School of Medicine		(1932)	92.4
Columbia Univ. College of Physicians and Surgeons		(1932)	90.9
New York University, University and Bellevue Hospital Medical College		(1896)	82.9
Meharry Medical College		(1932)	84.1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University College of Medicine		(1931)	Missouri
Tulane University of Louisiana School of Medicine		(1923)	Louisiana
College of Physicians and Surgeons of Baltimore		(1914)	Maryland
Detroit College of Medicine and Surgery		(1932)	Michigan
Medical College of the State of South Carolina		(1923)	S. Carolina

Oklahoma September Report

Dr. J. M. Byrum, secretary, Oklahoma State Board of Medical Examiners, reports the written examination held in Oklahoma City, Sept. 12-13, 1933. Seven candidates were examined, all of whom passed. Eight physicians were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Number Passed
School of Medicine of the Division of the Biological Sciences, University of Chicago		(1933)	1
St. Louis University School of Medicine		(1932)	1
University of Oklahoma School of Medicine		(1932, 2)	2
University of Pennsylvania School of Medicine		(1931)	1
University of Tennessee College of Medicine		(1932)	1
University of Wisconsin Medical School		(1930)	1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1930), (1932)	Arkansas
University of Maryland School of Medicine		(1913)	N. Carolina
University of Minnesota Medical School		(1921)	Minnesota
University of Buffalo School of Medicine		(1927)	Minnesota
University of Tennessee College of Medicine		(1931)	Tennessee
Baylor University College of Medicine		(1932)	Texas
University of Texas School of Medicine		(1932)	Texas

Book Notices

Tuberculous Bacilliaemia. By G. S. Wilson. With appendices and notes by Herta Schwabacher, C. C. Okell, and E. A. Wood. Medical Research Council, Special Report Series, No. 182. Paper. Price, 2s.6d. Pp. 146, with illustrations. London: His Majesty's Stationery Office, 1933.

Within the last few years, numerous excellent critical reviews accompanied by sound experimental investigation of the problem concerned have appeared under the auspices of the Tuberculosis Committee of the Medical Research Council in Great Britain. Dr. Wilson's monograph conforms to the high standard set by previous publications. The numerous reports of tuberculous bacillemia emanating from central Europe at the present time, based on the views and technic of Löwenstein, have formed a highly puzzling chapter in tuberculosis investigation. Tuberculous bacillemia has been reported as extremely frequent in all forms of tuberculosis, but in addition its existence has been recorded by Löwenstein and others as common in rheumatism, arthritis, chorea and a variety of diseases of the nervous system, which have accordingly been considered by these investigators as hitherto unsuspected forms of tubercle bacillus disease. During the last few years, much opposed evidence has also accumulated. Wilson has summarized the evidence for both sides and evaluated it in a thoroughly sane way. His criticism casts grave doubt on the reliability of much of the evidence recorded for bacillemia in the diseases named. In the monograph a large number of sources of error are pointed out, to which it is clear that many of those reporting positive results have not paid sufficient attention. Readers cannot fail to be impressed by the soundness of his presentation. As appendixes to the monograph, Drs. Schwabacher, Okell and Wood have reported carefully controlled experimental investigations of their own on the subject, which completely fail to bear out the contention of frequent tuberculous bacillemia in visceral tuberculosis and the other diseases named. On the other hand, Dr. Schwabacher's results indicate that only by rigid technic can certain sources of error leading to false positive results be excluded. The general conclusion of the authors is that technical errors are responsible for a high percentage of the cases of bacillemia reported.

The Essential Psychoses and Their Fundamental Syndromes. By Dom Thomas Verner Moore, Ph.D., M.D. Volume III, Number 3, Studies in Psychology and Psychiatry from the Catholic University of America. Edited by Edward A. Pace, Professor of Philosophy. Paper. Pp. 128. Baltimore: The Williams & Wilkins Company, 1933.

This is an ingenious attempt at assembling the symptoms of psychoses into fundamental syndromes through the application of a mathematical method of association or correlation. After selection and definition of the separate symptoms observed in the essential psychoses (dementia praecox and manic-depressive conditions), a tetrachoric method of intercorrelating symptoms was adopted instead of the purely empirical grouping of these symptoms into syndromes, and the syndromes were determined by mathematical incidence of the symptoms. Those interested in the details of applying Spearman's tetrad function to determine the underlying common factors in a table of variables can find a description of the method in the reference given in the footnotes in Dr. Moore's book. Twenty-six of the symptoms noted in a group of 402 psychotic patients have been defined and grouped under the four headings of general, cognitive, emotional and volitional. In the final study, cases of only 367 of the patients were used in obtaining the intercorrelations of the symptoms. Naturally, a work attempting an approach of this sort will not prove easy reading. Some knowledge of mathematical functions and methods is essential, and the reader must be grounded in clinical psychiatry. As has been stated, the symptoms of the psychoses have been chosen from the dementia praecox and manic-depressive groups. After the application of Dr. Moore's method, five syndromes are erected out of the twenty-six basic symptoms displayed by the patients studied. Four of the syndromes, which are termed the catatonic syndrome, the deluded and hallucinated syndrome, the constitutional hereditary depression syndrome and the retarded depression syndrome, are more or less familiar as clinical entities under somewhat different terminology. The fifth syndrome is termed by Dr. Moore paranoia irritabilis. He states that the cardinal syndrome underlying this condition is that of paranoid irritability and that it consists of four specific symptoms—irritability, tendency to tantrums, destructiveness, and euphoria. There is a tendency of paranoia irritabilis to combine with other symptoms of psychosis. This book will hardly be used by the medical student or by the general practitioner. To the psychiatrist it presents a departure from the usual method of classifying symptoms. The symptoms selected as a basis for this study are well defined in the text.

Les réveils de la tuberculose pulmonaire chez l'adulte: Conditions de leur polymorphisme anatomo-clinique. Par le Professeur Émile Sergent. Paper. Price, 34 francs. Pp. 226, with 38 illustrations. Paris: Masson & Cie, 1933.

In this work the author has given a brilliant clinical interpretation of the reactivation of tuberculosis in the adult. In places it is highly speculative. Nevertheless it is a fascinating work and convincing even where the issues may be bridged with scant evidence. It consists of a collection of lectures fitted together and given a general title. It contains the author's theories, representing well the French school, supplemented by serial roentgenograms. One cannot read this book without obtaining clearer views on the complex subject of reactivation.

The first chapter is a lecture devoted to the clinical evolution of the disease, and the second to the problem of reactivation. Each serves as an outline for the last three chapters, which elaborate interestingly on three phases of reactivation: the soil, the seed, and the routes of reactivation.

Perhaps the greatest worth of the volume is in reemphasizing the rôle of the host in the disease. The author considers the soil of tuberculosis little different from the soil for wheat farming or for the oaks in Fontainebleau, where many acorns fall but few produce oak trees.

First, the host is divided into two great divisions of virgin soil and tuberculized soil. Only the tuberculized soil is concerned in the subject under discussion. The difference of the two is explained by the classic "Koch phenomenon" (supplemented by the work of Roemer and Debré), wherein the host undergoes a change of reactability as a result of and during a tuberculous infection. This "allergy" or lack of it is the fundamental difference. Then the author brings in almost an innumerable set of minor factors that bear on the infection and its course: age, race, sex, puberty, pregnancy, other diseases, accidents, trauma and many other conditions that change the soil from a resistant one to a good culture medium. Slight temporary chemical changes may permit the growth of a tubercle bacillus that would otherwise be eliminated or die out. Certain tissues, for example, will rarely ever permit tubercle bacilli to grow (muscle, pancreas); others rarely; while others are good soil. Now these tissues are not only modified by allergy but all the vicissitudes of the human body during life also enhance or depress the growth of the parasites that chance to localize in them. The symptomless lesion that contains living bacilli "buried alive" he considers active, but the lesion in exacerbation he calls an "active evolution," beginning with active clinical disease. From this, according to Sergent, it can be assumed that there would be three types of lesion: cured, active and "active evolutive." The active lesion, he thinks, elaborates a filtrable virus through the capsule that may ultimately cause a spread of the disease. There are, perhaps, some workers who would take exception to the liberal use of "activity." Large numbers of primary tubercles bury the bacilli alive and they stay buried until they die out without producing disease at all. These could properly be called encapsulated and healing, rather than active.

In the second section the author considers the parasite. Tubercle bacilli, like all living beings, have peculiar and variable affinities that govern largely its localizations and resulting infections. Some bacilli, he thinks, are inert and are thrown out without any effect on the host; others are active and may localize if the opportunity presents itself. The extensive polymorphism of clinical tuberculosis, however, is explained largely on the basis of a variable parasite. Not only does the parasite vary from strain to strain but each bacillus varies in its growth and action. Particularly does he stress the effect of the filtra-

ble phase of the tubercle bacillus when the effect on the host is atypical. He is not as extreme as Calmette in setting apart a separate "ultravirus disease," but he does believe in an overlapping of virus and bacillus, producing a heterogeneous type of parasite that causes much of the variability in clinical manifestations.

He explains many obscure clinical phenomena as a result of the filtrable phase. The condition in one patient simulated asthma but ultimately was found to be tuberculosis. The early obscurity he thought was due to filtrable forms, because by filtering the sputum they obtained an atypical tuberculosis in animals whereas there were no bacilli found in the sputum until long afterward, when an "evolutive attack" appeared that was typically tuberculous. The lesion of the virus, he states, is not caseous and there is no primary focus ever produced. Caseation comes only with the bacilli. Many other conditions are reported to be due to the virus, such as rheumatoid arthritis, erythema nodosum, and certain types of tuberculous pneumonia. The results, however, are not constant, because when the virus comes back to the bacillary phase many new strains of bacilli are created that vary from one to another.

There is no denying now that filtrable forms of tubercle bacilli exist, that they are infectious and that they are a factor in the disease; but the author's free interpretation of atypical clinical signs in terms of the yet rather meager evidence of filtrable forms in such cases must be considered for the present only theory. For example, free microscopically visible granules may account for all the phenomena without invoking the ultramicroscopic forms at all; non-acid fast forms may also escape detection and play a part instead of the virus. The extent of the rôle of the pleomorphic forms of tubercle bacilli is yet undetermined and can be made out only by long and careful bacteriologic study.

The routes of reactivation are given with an excusable bias in favor of the author's theories of lymphatic spread. As interesting as his ideas are relative to the reactivation of old foci in the parenchyma and the hilar lymph nodes by lymphatic spread, both with and against the normal current, the extent of each mode of spread is still undetermined. Little stress is placed on the direct rupture of old foci into the bronchi, of endobronchial spread by a penetration into the bronchi, or by hematogenous spread, well represented by the recent German school of teaching. It is true perhaps that some must start in the perifocal lymphatics; but they are not necessarily confined there long. Both the blood and the bronchial channels may be penetrated easily and early and cannot well be left out of such a work. The rather direct route from the cervical lymphatics to the lungs needs further confirmation, and the diagnosis of "perilobulitis" by the x-rays alone would be difficult. Those who follow the evolution of tuberculous lesions to the necropsy room find that many shadows are overlooked on antemortem roentgenograms and that many shadows which are present are of little or no significance. Much remains to be done in the pathologic interpretation of roentgenograms.

In spite of or, in fact, on account of much controversial matter, the book is highly recommended to everybody engaged in tuberculosis work, especially those interested in the subject from an epidemiologic and clinical standpoint. It may be justly represented as a potent stimulant to creative thinking in tuberculosis as well as a work that is composed principally of good teaching that will endure.

Teaching Methods in Medicine: The Application of the Philosophy of Contemporary Education to Medical Schools. By William Duncan Reid, A.B., M.D., F.A.C.P., Assistant Professor of Cardiology, Boston University School of Medicine. Cloth. Price, $1. Pp. 111. Boston: The Author, 1933.

Many clinical teachers of medicine, admittedly, understand but little of pedagogy. This small volume attempts to describe as simply as possible certain fundamental pedagogic methods now used by modern teachers in other fields of instruction and to arouse the interest of clinical teachers in the broad problems of education. The author begins with the argument that at present no formal teacher training is necessary for teachers of medicine and therefore that their teaching is apt to be conducted in more or less haphazard fashion and in a manner not strikingly successful. He describes briefly various teaching methods employed in progressive schools and colleges and attempts to show how these methods might be utilized or modified to improve medical teaching. He gives a number of good references to the current literature on education, urges doctors who are instructing medical students to study seriously how to teach and suggests, finally, that a useful development in the scheme of medical education well might be to bring it into line with the philosophy of education now existing in the public schools. On the whole, this book makes a gallant effort to be stimulating and of practical interest to teachers of medicine. As a pioneer effort, it deserves sympathetic commendation.

The Anatomy of the Human Skeleton. By J. Ernest Frazer, D.Sc., F.R.C.S., Professor of Anatomy in the University of London. Third edition. Cloth. Price, 28s. Pp. 292, with 219 illustrations. London: J. & A. Churchill, 1933.

The most important addition to Frazer's fine contribution to the subject of anatomy of the human bones and joints and their muscles is a description of ossification in individual bones. He advises those who wish to study the skeleton not to confine their attention to the bones but to consider also the cartilage, ligaments and joints that are concerned in maintaining the form of the body and in enabling it to move about. He divides the skeleton into the appendicular skeleton of the limbs, the axial skeleton of the trunk and the skull. Bones do not take shape as such ab initio but are preformed in the embryo as condensations of mesenchyme, which in most cases become cartilaginous before ossification commences in them but in some remain unchondrified. In the former case the bones are formed in cartilages, and in the latter they are formed in membrane. These terms mean that the bones have replaced cartilage or noncartilaginous membrane, as the case may be. The process of ossification is essentially similar in the two varieties of formation except that in chondral ossification the cartilage is calcified first and then absorbed and replaced by the true bony formation. Certain large cells called osteoblasts have the power of depositing or forming bone around themselves; they exist in the covering tissues of the developing bone (periosteum or perichondrium) and, in the case of chondral ossification, grow into the cartilage and occupy the spaces made by the confluence of the cell spaces that goes with calcification. The early bone thus formed is removed by the action of other cells known as osteoclasts, and in this way a medullary cavity is provided in long bones while additional bone is being laid down on the surface under the periosteum, so that the bone increases in thickness. Thus there is no direct ossification of cartilage but a replacement of it by bone that is made in the same way as in membrane bones. This book is a virtual encyclopedia of the subject considered, and students should so regard it. It is not elementary or written for those who try to grasp the subject in a hurry. The illustrations, which are chiefly diagrammatic, are excellent. Many are in color. In reading this book the greatest benefit can be derived if the student has dried specimens of bones before him and refers to them continually.

Dietetics for the Clinician. By Milton Arlanden Bridges, B.S., M.D., F.A.C.P., Associate in Medicine at the New York Post-Graduate Medical School, Columbia University. In collaboration with Ruth Lothrop Gallup, Dietitian. Foreword by Herman O. Mosenthal, A.B., M.D., Director of Medicine at the New York Post-Graduate Medical School, Columbia University. Cloth. Price, $6.50. Pp. 666. Philadelphia: Lea & Febiger, 1933.

This volume follows the usual routine of dietetic textbooks, proceeding from a review of normal digestion, food requirements and food classifications through the dietetic therapy of disease, infant feeding and diseases of childhood to a comprehensive appendix of recipes and statistical tables. The majority of the chapters have been compiled by the author, others having been left in the hands of his colleagues who are specialists in various fields. While the pathologic and dietetic aspects of the subjects are well handled, the book excels in its purpose as a thorough reference work. It is liberally filled with practical diet outlines, food tables and recipes, particularly helpful to the practitioner who, unfortunately, is frequently expected to be both menu designer and ready reference cookbook for his patients. In fact, one does not encounter in one volume as complete a list of food tables as is found here. Attention may be called to the thoroughness of the less usual tables, such as those covering foods highest in oxalic acid, foods capable of increasing uric acid, and purine-free foods.

Medicolegal

Insurance: Loss of Use of Arm by Surgeon.—The defendant insurance company insured the plaintiff, a physician and surgeon, against "dismemberment or complete and permanent loss of use of limb." By reason of paralysis agitans, affecting his right arm, the plaintiff became unable to operate with a knife. He sued on the policy, and when the trial court directed a verdict for the insurance company he appealed to the United States circuit court of appeals, seventh circuit. The question on appeal was whether, within the meaning of the policy, the insured physician had completely and permanently lost the use of his right hand or arm as the result of disease, *with reference to the occupation in which he was engaged when he was insured.* The plaintiff physician contended that the policy insured him as an operative surgeon; that he was a practitioner of medicine only as an incident to his operative surgery, and that his right to insurance benefits as an operative surgeon, because of the loss of the use of his right hand and arm, was not defeated by the fact that he could still use them in the practice of medicine. The use of the arm and hand, he contended, was completely and permanently lost for all practical purposes in the occupation with reference to which he was insured.

The policy, said the circuit court of appeals, insured the plaintiff as a physician and surgeon. Ninety-five per cent of his work may have been surgery when the policy was issued, but, if so, that fact formed no part of the contract and there was no evidence that the insurance company knew it when the contract was made. The evidence showed that since the plaintiff's illness occurred he did everything in the practice of his profession that he did before, with the exception of using the knife in operations. In doing those things he used his right hand and arm, not perhaps as well or with as much ease as he formerly did, but certainly in such manner and extent as to constitute some actual practical use of his right arm and hand in the pursuit of his profession. The fact that the plaintiff has sustained a very great and serious loss in the use of his right arm and hand and that that loss is permanent is not determinative, however, of his right to recover in this action. The burden of proof was on him to show that no actual practical use of his hand and arm as a physician and surgeon remained, and in that proof he failed. The evidence was not conflicting, said the court, and if the case had been submitted to a jury and the jury had returned a verdict for the physician, there would have been no evidence in the record to support the verdict. There was no error committed, therefore, when the trial court directed a verdict for the insurance company. The judgment of the trial court was affirmed.—*Beck v. Zurich General Accident & Liability Ins. Co., 62 Fed. (2d) 965.*

Eugenic Sterilization Statute Constitutional.—The sexual sterilization of inmates of state institutions for the insane who are afflicted with hereditary, recurrent forms of insanity, idiocy, imbecility, feeblemindedness or epilepsy is authorized by article 3, chapter 26, Session Laws, Oklahoma, 1931. Main, an inmate of the Central Oklahoma State Hospital for the Insane, came within this class. The State Board of Public Affairs, complying scrupulously with the provisions of the statute, ordered him sterilized. Its order was affirmed by the district court, Oklahoma county. Main, by his guardian, appealed to the Supreme Court of Oklahoma.

On Main's behalf it was contended that the district court erred in finding that the proposed vasectomy would be without detriment to Main's general health. The physicians who testified that such an operation would be beneficial, rather than detrimental, it was argued, had never performed such an operation. But, said the Supreme Court, learned and scientific men can virtually know things without having experienced them, and the opinion of these physicians is confirmed by *Buck* v. *Bell,* 143 Va. 310, 130 S. E. 516, where it was said:

> These operations do not impair the general health, or affect the mental or moral status of the patient, or interfere with his or her sexual desires or enjoyment. They simply prevent reproduction. In the hands of a skilled surgeon, they are 100 per cent successful in results.

So too in *Smith* v. *Command, Wayne Probate Judge,* 231 Mich. 409, 204 N. W. 140, it was said: "These operations are the least radical known to medical science." The record amply sustained the finding made both by the board and by the district court, that vasectomy would not injure Main's general health.

It was next contended that the power conferred by the statute on the State Board of Public Affairs, an administrative body, is judicial in character and therefore under the state constitution could not be lawfully so conferred. The power so conferred, said the court, requires the administrative board to ascertain facts and to make a proper order on the basis of the facts so found. While the board's duties are to some extent judicial or quasi judicial, yet a review and trial de novo before a judicial tribunal are authorized. Because of the review authorized, the trial de novo, and the stay pending such review and trial, Main was not injuriously affected by the grant of quasi judicial powers on an administrative board. He has no concern, therefore, with the grant of power to the board.

Main's guardian next contended that the sterilization statute was contrary to the provision of the Oklahoma constitution, which prohibits the infliction of cruel or unusual punishments. The Supreme Court found, however, that there is no element of punishment involved in the sterilization of feebleminded persons. In this respect sterilization is analogous to compulsory vaccination; both are nonpunitive. The constitutional prohibition of cruel or unusual punishment has no application to the surgical treatment of feebleminded persons, for the constitutional prohibition has reference to punishment after conviction of crime. The record, said the supreme Court, affords uncontradicted evidence to support the view of the trial court that vasectomy is not cruel, inhuman, unreasonable or oppressive.

On behalf of Main, it was next contended that the act violates section 7, article 2, of the state constitution, which provides that "no person shall be deprived of life, liberty, or property, without due process of law," because "it deprives a man of a part of his life, to wit, the ability to produce life" or procreate. Assuming, said the Supreme Court, that the right to beget children is a natural and constitutional right, yet this right cannot be extended beyond the common welfare. Under the police power, the state may impose reasonable restrictions on the natural and constitutional rights of its citizens. This statutory provision for sterilization of feebleminded inmates of public institutions, the court held, constitutes a reasonable restriction on such natural and constitutional rights.

A further objection urged against the act was that it violated section 2, article 2, of the state constitution, which provides that

> All persons have the inherent right to life, liberty, the pursuit of happiness, and the enjoyment of the gains of their own industry.

This contention, continued the court, is without merit. As was said in *Buck* v. *Bell,* supra:

> The public welfare may call upon the best citizens for their lives. . . . It would be strange if it could not call upon those who already sap the strength of the state for these lesser sacrifices, often not felt to be such by those concerned, in order to prevent our being swamped with incompetence. It is better for all the world, if instead of waiting to execute degenerate offspring for crime, or to let them starve for their imbecility, society can prevent those who are manifestly unfit from continuing their kind. The principle that sustains compulsory vaccination is broad enough to cover cutting the fallopian tubes.

The order of the State Board of Public Affairs that Main be sterilized was accordingly affirmed.—*In re Main (Okla.), 19 P. (2d) 153.*

Society Proceedings

COMING MEETINGS

American Society of Tropical Medicine, Richmond, Va., Nov. 15-17. Dr. Henry E. Meleney, Vanderbilt University School of Medicine, Nashville, Tenn., Secretary.

Medical and Surgical Association of the Southwest, El Paso, Texas, Dec. 7-9. Dr. W. Warner Watkins, Box 1587, Phoenix, Ariz., Secretary.

Society for the Study of Asthma and Allied Conditions, New York, Dec. 9. Dr. W. C. Spain, 116 East 53d Street, New York, Secretary.

Southern Medical Association, Richmond, Va., November 14-17. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southern Surgical Association, Hot Springs, Va., Dec. 12-14. Dr. Robert L. Payne, 142 York Street, Norfolk, Va.

Western Surgical Association, Cincinnati, Dec. 8-9. Dr. Frank R. Teachenor, 306 East 12th Street, Kansas City, Mo., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

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Renal Unit in Kidney of Vertebrates. J. G. Edwards assisted by C. Schnitter, Buffalo.—p. 55.

Hair Growth: Study of Effect of Pregnancy on Activity of Follicle in Guinea-Pig (Cavia Cobaya). Helen L. Dawson, St. Louis.—p. 89.

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Notes on Morphology of Chromophil Material of Nerve Cells and Its Relation to Nuclear Substances. L. Einarson, Baltimore.—p. 141.

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Autotransplantation of Placenta to Anterior Chamber of the Eye and Its Effect on Lactation. S. Litt, Chicago.—p. 37.

*Fallacies of Trichomonas Vaginalis Vaginitis: I. Streptococci as Etiologic Agents. H. C. Hesseltine, Chicago.—p. 46.

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Observations on Adynamic Ileus: Report of Case. E. A. Schumann and J. V. Missett, Jr., Philadelphia.—p. 59.

Relationship Between Gynecology and Orthopedics. A. Stein, New York.—p. 64.

Importance of Establishing Conditioned Reflex "Pregnancy—Syphilis" in the Minds of the Medical Profession. E. L. Keyes, New York.—p. 71.

Occipitoposterior Position: Review of Two Hundred and Five Cases. W. H. Mast, Pueblo, Colo.—p. 74.

Thyrotoxicosis in Its Relation to Pregnancy. J. T. Wallace, New York.—p. 77.

Elephantiasis of the Vulva: Analysis of Twenty-Six Cases in Negro Women, from the Records of Charity Hospital in New Orleans. J. T. Witherspoon and Elizabeth M. McFetridge, New Orleans.—p. 84.

Abdominal Cesarean Sections: Analysis of Two Hundred and Twenty Cases. E. D. Colvin, Atlanta, Ga.—p. 90.

Primary Ovarian Pregnancy: Report of Case with Decidual Reaction. A. M. Young and G. M. Hawk, Cleveland.—p. 97.

Carcinoma of Cervix in a Girl of Sixteen. M. Glass, Brooklyn.—p. 104.

Tubal Twins: Case. W. A. Jewett, Brooklyn.—p. 108.

Kraurosis Vulvae. G. Johnson, Wilmington, N. C.—p. 110.

Combined Pregnancy. H. D. Lafferty, Philadelphia.—p. 112.

Traumatic Rupture of Liver and Kidney with Evisceration, Complicating Pregnancy. W. F. Gemmill and T. A. Martin, York, Pa.—p. 113.

Inexpensive Light for Delivery or Operating Rooms. W. C. Danforth, Evanston, Ill.—p. 114.

Epilepsy Associated with Ovarian Dysfunction Treated by Irradiation. I. I. Kaplan, New York.—p. 116.

Omphalitis of the New-Born. C. C. Weitzman, Brooklyn.—p. 117.

Device for the Correction of Postpartum Uterine Atony. E. L. Stone, New Haven, Conn.—p. 118.

Acute Fibroid Degeneration with Complete Torsion of the Uterus: Case. A. J. Fleischer and J. I. Kushner, New York.—p. 120.

Trichomonas Vaginalis Vaginitis.—Hesseltine presents a preliminary report of experimentation with the vaginal flagellates, which indicates that the vaginal trichomonads live on bacteria and are possibly nonpathogenic. He describes the technic for the separation of the flagellates and bacteria by the washing and the micromanipulation methods. He draws the following conclusions from this study: 1. The pathogenicity of Trichomonas vaginalis Donné is still unproved. 2. Some of the fallacies of the arguments favoring pathogenicity of this protozoon have been mentioned. 3. Experimental observations indicate that T. vaginalis Donné is a scavenger and feeds on bacteria. 4. T. vaginalis Donné fails to grow in the medium used in the absence of bacteria. 5. Presumably, an abnormal vaginal flora, or the condition producing it, is a prerequisite for the invasion of the trichomonads. 6. A nonhemolytic streptococcus is capable of producing a "trichomonas vaginitis" in the absence of trichomonads.

American Journal of Syphilis, St. Louis

17: 305-448 (July) 1933

Syphilitic Peripheral Vascular Diseases: Treatment by Means of an Intermittent Negative Pressure Environment. L. G. Herrmann, Cincinnati.—p. 305.

Sudden Right Hemiplegia and Dysarthria Occurring in a Young Male Negro Some Five Weeks After Cessation of Brief Arsenical Therapy; Evidences of Syphilitic Meningitis and Arterial Occlusion But Not of Neuroradiculitis; Discussion of Diagnosis and Therapy. L. F. Barker, Baltimore.—p. 321.

*Syphilis of Cerebellopontile Angle. E. D. Friedman, S. Brock and P. G. Denker, New York.—p. 330.

*Method to Introduce Larger Amounts of Arsphenamines into Central Nervous System: Preliminary Report. J. Wittenberg, Brooklyn.—p. 339.

Studies of Reaction of Spirochaeta Pallida, Recurrentis and Trypanosoma Equiperdum to Arsenobenzol Preparations. F. Földvári, Budapest, Hungary.—p. 346.

*Takata Serum Reaction as Diagnostic and Prognostic Aid in Syphilology and Dermatology. H. Tannenholz, Detroit.—p. 352.

Observations on Spinal Fluid Sugar and Chlorides in Neurosyphilis. G. Brewer, Washington, D. C.—p. 382.

Iron Reaction in Paretic Neurosyphilis. H. H. Merritt, M. Moore and H. C. Solomon, Boston.—p. 387.

Reversal of Blood Wassermann Reaction in Untreated Syphilis. E. T. Hoverson, G. W. Morrow and R. O. Hawthorne, Kankakee, Ill.—p. 392.

Syphilis of Cerebellopontile Angle.—Friedman and his associates present five cases in which there were phenomena referable to the seventh and eighth nerves together with homolateral cerebellar signs: there were definite signs of involvement of the fifth nerve in four. There were general cerebral symptoms, such as headache, dizziness and vomiting. In four, the disks were normal; in one, the fundi showed papilledema and hemorrhages. In spite of clinical improvement, the damage to the eighth nerve persisted in all the patients. There was marked facial weakness of the peripheral type. Such definite facial weakness is an unusual observation in early cases of angle tumor. Moreover, the signs of involvement of the fifth nerve were much more conspicuous than those observed in cases of angle tumor in the early stage, in which, as a rule, only anesthesia of the cornea on the ipsilateral side can be demonstrated. The authors emphasize the fact that the coarse vestibulocerebellar type of nystagmus was not observed in their patients. It has been ascribed by Marburg and others to pressure on the brain stem and is encountered in most angle tumors. In the differential diagnosis between this lesion and neoplasm of the cerebellopontile angle, it would seem that the disappearance, under early and persistent antisyphilitic therapy, of the general and some of the local angle signs and symptoms is in favor of a syphilitic process. The positive serologic observations are of the greatest importance. The Wassermann reaction was positive in the blood in all patients. In four of them, serologic evidence of syphilis was present in the cerebrospinal fluid. This syndrome must not be confused with simple syphilis of the eighth nerve or the neural recurrences that come on as a result of inadequate treatment. In these conditions the lesion is usually limited to the eighth nerve, especially the cochlear division, and phenomena attributable to pathologic changes in the angle are absent. Active and persistent antisyphilitic treatment led to considerable improvement in three patients. The early recognition of this clinical entity is of practical importance, because the prompt institution of antisyphilitic therapy yields good results.

Introduction of Arsphenamines into the Central Nervous System.—Since the drugs of the epinephrine group are powerful, though ephemeral, dilators of the cerebral vessels in man, and since the bulk of arsphenamine injected intravenously is deposited into the tissues in a few minutes, Wittenberg thought that by using both, properly timed, an increased amount of the arsphenamine could be introduced into the central nervous system. One should expect to find more arsenic in the cerebrospinal fluid after such treatment than in that of patients treated by the ordinary method, provided, of course, the menin-

ges of the patients are permeable to arsenic; viz., that the central nervous system is involved. The safety of this treatment was tested in properly chosen patients. The author's report on the small number of patients treated shows that the treatment is safe in properly selected cases and that a larger amount of arsenic is found in the cerebrospinal fluid following this modified form of treatment.

Takata Serum Reaction. — Tannenholz states that the Takata serum reaction is almost always positive in cases of advanced, definite parenchymatous liver damage; e. g., cirrhosis of the liver. It is more frequently positive in cases of syphilis (15 per cent) than in other cases (3.5 per cent) (genitourinary, dermatologic and medical cases), when a question of liver damage does not present itself. When the Takata test is positive in cases of syphilis, an association with liver damage is suggested. It is more frequently positive in cases of secondary syphilis (34 per cent) and seropositive latent syphilis (37 per cent) than in primary (14 per cent) and tertiary (14 per cent) syphilis. The author suggests that arsenical exanthem is more common in cases of syphilis with a positive Takata reaction than in syphilitic patients with a negative Takata reaction. The outcome of the Takata reaction bears no relation to the Wassermann or Meinicke reactions. The Takata test is not infrequently positive in nonsyphilitic cases when other signs of liver damage or probable changes in the albumin-globulin ratio are present (arthrosis, nephrosis, pernicious anemia). The Takata serum reaction may be of diagnostic and prognostic aid in syphilitic, dermatologic and medical cases.

Archives of Pathology, Chicago

16: 177-314 (Aug.) 1933

Appendical Oxyuriasis and Appendicitis: Based on a Study of Twenty-Six Thousand and Fifty-One Appendixes. H. Gordon, Ann Arbor, Mich.—p. 177.

Spondylitis of Swine Associated with Bacteria of Brucella Group. W. H. Feldman and C. Olson, Jr., Rochester, Minn.—p. 195.

Influence of Intake of Calcium on Thyroid Gland of Albino Rat. Juanita Thompson, Toronto, Canada.—p. 211.

Experimental Pathology of Liver: XII. Effects of Feeding Desiccated Thyroid Gland on Restoration of Liver. G. M. Higgins, Rochester, Minn.—p. 226.

California and Western Medicine, San Francisco

39: 1-72 (July) 1933

Alameda County Plan: Plan for the Care of Indigent and Part-Pay Patients, and for a Mutual, Nonprofit Hospital Service. G. G. Reinle, Oakland.—p. 1.

Central Clinic Service—San Diego County Plan: Plan for Reduced Fee Medical Care and Hospitalization. H. G. Holder, San Diego.—p. 6.

Living Grafts of Endocrine Glands. H. B. Stone, J. C. Owings and G. O. Gey, Baltimore.—p. 10.

Prostatic Obstruction: Development of Its Surgical Treatment. H. C. Bumpus, Jr., Rochester, Minn.—p. 13.

Cardiovascular Disease in Diabetes Mellitus: Analysis of Four Hundred and Twenty-Five Cases. J. W. Sherrill, La Jolla.—p. 17.

The Physician's Interest in the Making of a Will. H. F. Peart, San Francisco.—p. 20.

Muscle Training in Industrial Injuries. T. E. P. Gocher, San Francisco.—p. 21.

Refraction: Is It a Medical or a Nonmedical Problem? T. W. Kelsey, Sacramento.—p. 25.

Calcium Therapy in Urology. H. A. R. Kreutzmann, San Francisco.—p. 29.

Chronic Purulent Otitis Media: Its Treatment with Iodine Powder (Sulzberger). R. Fletcher, San Francisco.—p. 32.

Adenomatous Goiter: Clinical Study. W. P. Kroger, Los Angeles.—p. 35.

*Sterility: Report of Seven Hundred Consecutive Cases. F. M. Loomis, Oakland.—p. 38.

Toxemias of Pregnancy. L. I. Breitstein and A. Bernstein, San Francisco.—p. 42.

Sterility.—Loomis presents an analysis of the histories of 732 sterile women, of whom 473 were treated. Of these, 208, or 44 per cent, became pregnant. The Rubin test was normal in 53 per cent, and 13 per cent were dismissed because repeated efforts showed total closure of tubes. Repeated efforts produced partial or complete opening in 34 per cent of these women whose first examinations were unsatisfactory, and nearly 20 per cent of these women became pregnant. Normal spermatozoa were present in 53 per cent after coitus, 37 per cent were only fair, and 10 per cent showed complete aspermia, giving a high proportion of responsibility in sterility to the male or relative infertility. Cervical stenosis and erosion were found in 42 per cent and 38 per cent, respectively. Both are amenable to office treatment. Endocrine dysfunction was present in 67 per cent, most of whom were treated with thyroid or preparations of the female sex hormone. Basal metabolism is not relied on alone in judging hypothyroidism. Of these patients, 35 per cent became pregnant. The incidence of toxemia is not higher than normal, but involuntary abortions occurred in 17 per cent.

Colorado Medicine, Denver

30: 245-276 (July) 1933

Complications in Treatment of Congenital Dislocation of Hip. R. G. Packard and H. I. Barnard, Denver.—p. 248.

Corrective Treatment of Compression Fractures of the Spine. Atha Thomas and C. E. Sevier, Denver.—p. 252.

*General Principles of Radiation Therapy of Tumors. W. W. Wasson, Denver.—p. 257.

The Physician Looks at Himself. L. W. Frank, Denver.—p. 262.

Radiation Therapy of Tumors. — Wasson presents the following points concerning radiation therapy of tumors: 1. There should be a careful examination of the patient with an analytic evaluation of the symptoms present. 2. There should be a judicious and never a contaminated removal of a section of the tumor for the microscopic diagnosis between inflammatory, benign and malignant neoplasm. 3. In the preliminary examination, the amount and extent of metastases should be determined. It is nearly always the metastases that are fatal to the patient. 4. The degree of the malignant condition is of great importance in selecting the method of treatment—surgical or radiation therapy. It even governs the manipulation of the tumor during the preliminary examination. 5. In advanced cases of malignant disorders, if any treatment at all is justifiable, radiation therapy is nearly always the method of choice. The economic problem must be given special consideration in these cases. 6. If radiation therapy is selected as the method of choice, it should be applied by one especially qualified for the task. 7. The general management of the case should be under the direction of a radiologist, a surgeon and the attending physician. 8. Every radiologist should keep an active follow-up list of his cases in which radiation therapy has been employed. 9. Pain following surgical or radiation treatment is usually the first warning signal of a return of the condition in either the primary tumor or its metastases.

Illinois Medical Journal, Chicago

64: 105-208 (Aug.) 1933

The Surgeon's Duty in Cancer of Cervix Uteri. H. S. Crossen, St. Louis.—p. 123.

Diagnostic Importance of Roentgenologic Examination of Growing Bones. A. H. Parmelee, Oak Park.—p. 131.

Rectal Obstruction: Lymphogranuloma Inguinale. M. H. Streicher, Chicago.—p. 133.

Proper Education and Registration of X-Ray Technicians. G. Perry, Evanston.—p. 138.

What Is Blindness? Plea for More Frequent Use of Sight Saving Classes in the Public Schools. A. L. Adams, Jacksonville.—p. 143.

Early Care of Paralysis from Acute Anterior Poliomyelitis: Analysis of the Program in Twenty-Two Orthopedic Clinics and Hospitals. E. L. Compere and Margaret S. Campbell, Chicago.—p. 150.

Differentiation of Bronchogenic Carcinoma from Mediastinal Tumor. W. H. Newcomb, Jacksonville.—p. 156.

Cooperation Between Departments of Public Health and Practicing Physicians. A. Hall, Mount Vernon.—p. 160.

Medicolegal Aspects of "Spontaneous Fractures." K. Garve and C. E. Early, Los Angeles.—p. 164.

Carbuncle. W. D. Pennington, Chicago.—p. 171.

Dawn of a Specialty in Medicine: Allergy and Physical Allergy. W. W. Duke, Kansas City, Mo.—p. 174.

Diagnosis and Medical Management of Thyrotoxicosis. A. R. Elliott, Chicago.—p. 185.

Medical Practice in 1950. H. S. Baketel, Jersey City.—p. 191.

Digitalis. E. Podolsky, Brooklyn.—p. 195.

Myocarditis. J. G. Carr, Chicago.—p. 201.

Iowa State Medical Society Journal, Des Moines

23: 343-438 (July) 1933

Leads in Diagnosis. A. A. Schultz, Fort Dodge.—p. 343.

Rupture of Wounds Following Abdominal Operations. G. T. McCauliff, Webster City.—p. 347.

Surgical Accidents. R. A. Becker, Atlantic.—p. 351.

"Rational Point of View" in Our Practice. H. J. McCoy, Des Moines.—p. 358.

Progress of Women in Medicine. Emma M. Ackerman, Sioux City.—p. 361.

Journal of Infectious Diseases, Chicago

53: 1-144 (July-Aug.) 1933

Seasonal Changes in Cataphoretic Velocity and Virulence of Streptococci as Isolated from Well Persons, from Persons Having Epidemic or Other Diseases and from Raw Milk. E. C. Rosenow, Rochester, Minn.—p. 1.

Comparison by Direct Inoculation of Brilliant Green Bile Two Per Cent and Lactose Broths, Including Consideration of Parallel Planting Method of Water Analysis. L. W. Parr, Washington, D. C., and Elfreda L. Caldwell, Andalusia, Ala.—p. 12.

Variation Within the Colon-Aerogenes Group as Found in Bacteriologic Analysis of Water from Contaminated Pumps. L. W. Parr, Washington, D. C., and Elfreda L. Caldwell, Andalusia, Ala.—p. 24.

Mucoid Encapsulated Streptococci in Sporadic and in Milk-Borne Epidemic Scarlet Fever. I. Pilot and D. J. Davis, Chicago.—p. 29.

Micro-Organisms Which Decompose Specific Carbohydrate of Pneumococcus Types II and III. Grace M. Sickles and Myrtle Shaw, Albany, N. Y.—p. 38.

*Complement Fixation in Vaccinia and in Variola. R. F. Parker and R. S. Muckenfuss, St. Louis.—p. 44.

Metaphen: I. Results of Use of Metaphen in Experimental Septicemia. R. G. Douglas and K. E. Birkhaug, Rochester, N. Y.—p. 55.

Id.: II. Its Experimental Evaluation as an Antiseptic and Disinfectant. R. G. Douglas and K. E. Birkhaug, Rochester, N. Y.—p. 71.

Influence of High Frequency Displacement Currents on Bacteria. F. W. Fabian and H. T. Graham, East Lansing, Mich.—p. 76.

Nonspecific Precipitins for Pneumococcic Fraction C in Acute Infections. Rachel Ash, Philadelphia.—p. 89.

Agglutination Tests in Diagnosis of Infectious Abortion in Cattle (Bang's Disease), with Especial Reference to the Rapid Test. C. R. Donham and C. P. Fitch, St. Paul.—p. 98.

Dissociation of Clostridium Welchii. H. R. Livesay, Washington, D. C.—p. 125.

Precipitated Diphtheria Toxoid: I. Preparation and Antigenic Activity. L. C. Havens and D. M. Wells, Montgomery, Ala.—p. 138.

Complement Fixation in Vaccinia and Variola.—By the technic of complement fixation, Parker and Muckenfuss demonstrated a specific reaction between the virus of vaccinia and its immune serum. The reaction is influenced by the potency of the serum and the time allowed for fixation, and apparently many of the failures of other workers to demonstrate it have been due to the use of serum of insufficient activity or to too short a period of fixation. Active virus in the antigen is not necessary for fixation. Preparations which had been boiled or passed through a Berkefeld N candle, and in which no virus could be demonstrated, would still fix complement with immune serum, although not in as great a dilution as before treatment. These results are probably comparable to those obtained by Craigie in his study of the antigens taking part in the flocculation reaction. Specific complement fixation in smallpox has also been demonstrated by using a specific antivaccinal rabbit serum and the fluid from the pustules of the disease. This has been made possible by the adaptation of the test to a small volume, measuring the reagents in drops. Various materials from different cutaneous diseases and the vesicles of varicella have been tested, without false positive results. With vaccinia and variola the results have been uniformly positive when the material was collected before the thirteenth day of the eruption. Difficulty due to bacterial contamination has been avoided by the use of serum prepared against a bacteria-free antigen. Serums from ten patients with variola were tested, with partial or complete fixation in three. Complement fixation with a specific antivaccinal serum may be of assistance in the early diagnosis of smallpox.

Journal of Lab. and Clinical Medicine, St. Louis

18: 981-1088 (July) 1933

*Studies on Physiologic Effects of Fever Temperatures: Thermal Death Time of Neisseria Gonorrhea in Vitro, with Especial Reference to Fever Temperatures. C. M. Carpenter, Ruth A. Boak, L. A. Mucci and S. L. Warren, Rochester, N. Y.—p. 981.

Biochemical Studies on Mechanism of Phenylcinchoninic Intoxication. O. Fürth and R. Scholl, Vienna, Austria.—p. 991.

Treatment of Experimental Streptococcus Meningitis of Rabbits with Bacteriophage: Note. J. A. Kolmer and Anna Rule, Philadelphia.—p. 1001.

Spontaneous Cardiac Rupture in the Insane: Report of Six Cases. H. L. Stewart, Philadelphia, and H. C. Eaton, Warren, Pa.—p. 1004.

*V. Dermatologic Test Suggesting Autonomic Imbalance. J. B. Wolffe, Philadelphia.—p. 1012.

Evaluation of Efficacy of Oleic Acid with Bile Salts in Enterohepatic Disease: Clinical Experiment with Twenty-Five Subjects. S. Weiss, New York.—p. 1016.

Carcinoma of Stomach with Metastases to the Skin: Case Report. L. H. Criep and H. I. Miller, Pittsburgh.—p. 1023.

Hydrogen Ion Concentration of Nasal Secretion in Children with Acute Coryza: Preliminary Report. M. C. Hill and A. R. Harnes, New York.—p. 1029.

Marked Creatinemia with Recovery: Case. J. J. Selman and C. R. Linegar, Cleveland.—p. 1032.

Normal Range of Calcium and Inorganic Phosphorus in the Serum of Healthy Nonpregnant Women. J. W. Mull and A. H. Bill, Cleveland.—p. 1034.

Studies on Gastric Mucin: Its Effect on Gastric Acidity. D. H. Rosenberg and L. Bloch, Chicago.—p. 1041.

Physiologic Effects of Fever Temperatures.—Carpenter and his associates determined the thermal death time of fifteen strains of the gonococcus in vitro at fever temperatures of 39, 40, 41, 41.5 and 42 C. (102.2, 104, 105.8, 106.7 and 107.6 F.). Seven strains had been under cultivation for twelve years, one for ten years and the other seven were isolated from one to four months prior to the experiment. The resistance of the strains of gonococci examined to the fever temperatures was variable. The cultures that were isolated ten and twelve years ago had, on the average, a longer thermal death time than the recently isolated cultures. At 39 C. there was little, if any, effect on the growth of the organism. At 40 C., about 99.7 per cent of the organisms were killed by an exposure of ten hours, while death of all the cells was not obtained at thirty hours in eight of the strains. At 41 C., 99 per cent of the gonococci were destroyed in from four to five hours, while death of all the organisms required from eleven to twenty-three hours. At 41.5 and 42 C., 99 per cent of the gonococci were rendered nonviable in two hours. The remainder were killed at 41.5 C. in from seven to twenty hours, while at 42 C. the thermal death time varied from five to fifteen hours. In all instances the recently isolated cultures, with the exception of one "old" strain, showed the least resistance to 41, 41.5 and 42 C. The in vitro thermal death time of the gonococcus is short enough at 41, 41.5 and 42 C. to suggest artificially induced fever as a valuable aid in the treatment of disease due to this organism. It is doubtful whether complete sterilization by heat can be obtained always from a single artificially induced fever of a duration of five hours.

Dermatologic Test.—Wolffe found that tissue extract, among many fractions, contains one, apparently a polypeptide, which produces a cutaneous reaction in many persons. Because of its constricting local action, he has called this fraction the S, or strictor, substance. It is prepared in the following manner: Pancreas, kidney or any other tissue is extracted with a hydro-alcoholic menstruum containing hydrochloric acid. The extract is neutralized with ammonium hydroxide and filtered. The filtrate is acidified and concentrated in vacuo. Ammonium sulphate is added to the clear concentrate, yielding a precipitate which contains the S constituent. This precipitate is extracted with alcohol, and any insulin is removed if pancreas is used. The solution is concentrated in vacuo and passed through a Berkefeld filter, leaving a residue which contains most of the S substance. This residue is dissolved in an acid menstruum to give a 3 per cent solution. To perform the test, 0.025 cc. of the solution is injected subepidermally (not intradermally) by means of a 26 gage needle and a tuberculin syringe. A bleb is produced, and in the center of it a pearly white area appears. Histologically, the author has found this to be due to focal tissue changes. This usually develops in from three to five minutes after the injection and is considered a "positive" reaction, provided it remains for more than twenty-four hours. A "negative" reaction is one that fails to show this characteristic white center if 0.025 cc. is injected, or when it disappears in less than twenty-four hours. After testing over 500 normal persons and hospital patients, the author was impressed with the fact that apparently the so-called vagotonic or parasympatheticotonic persons react characteristically to a small amount of S substance, such as 0.025 cc. or even less.

Journal of Nervous and Mental Disease, New York

78: 1-112 (July) 1933

Vestibular Apparatus in Neurosis and Psychosis. P. Schilder, New York.—p. 1.

Study of Postural Persistence in Cases of Postencephalitis. L. S. Selling, Chicago.—p. 24.

Simple Apparatus for Pneumo-Encephalography. E. M. Abrahamson, Brooklyn.—p. 33.

Pellagra with Ocular Disturbance and Psychosis. H. J. Cronin, Cambridge, Mass.—p. 35.

Journal of Pharmacology & Exper. Therap., Baltimore

48: 267-374 (July) 1933

Studies on Calcium: VII. Some Calcium Effects on Thoracic Lymph Flow of Dogs. A. L. Lieberman, Chicago.—p. 293.
Id.: VIII. Therapeutic Effects of Calglucon (Calcium Gluconate) on Thrombophlebitic Edema. A. L. Lieberman and L. M. Zimmerman, Chicago.—p. 301.
Mechanism of Vomiting Induced by Quinidine: I. Quinidine Emesis in Animals with Denervated Hearts. A. C. Ernstene and S. Lowis, Boston.—p. 305.
Effect of Anthelmintics on the Host: I. Tetrachlorethylene; II. Hexylresorcinol. B. V. Christensen and H. J. Lynch, Gainesville, Fla.—p. 311.
Development of Tolerance to Nicotine by Rats. A. Behrend and C. H. Thienes, Los Angeles, Calif.—p. 317.
Effect of Administration of Cyanides on Thyroid Gland of Chickens. A. W. Spence, New York and Baltimore.—p. 327.
Physicochemical Properties of Some New Choline Derivatives in Relation to Their Chemical Constitution and Pharmacologic Action. W. F. Von Oettingen and R. O. Bowman, Cleveland.—p. 333.
Liver Damage in Dogs and Rats After Repeated Oral Administration of Cinchophen, Ethyl Ester of Paramethyl-Phenylcinchoninic Acid (Tolysin) and Sodium Salicylate. H. G. Barbour and M. E. Fisk, New Haven, Conn.—p. 341.
Mechanism of Vomiting Induced by Quinidine: II. A. C. Ernstene and S. Lowis, Boston.—p. 359.
Local Anesthetic Action of *p*-Aminobenzoates of Diethylamino-Ethoxy Alcohols. W. H. Horne and R. L. Shriner, Urbana, Ill.—p. 371.

Medical Journal and Record, New York

138: 37-72 (July 19) 1933

Gold Therapy in Tuberculosis. S. A. Knopf, New York.—p. 37.
Appendicitis From the General Practitioner's Point of View. D. Stetten, New York.—p. 39.
Paralysis of External Ocular Muscles: Report of Four Cases with Recovery. S. A. Agatston, New York.—p. 41.
Obstetric Shock and Maternal Mortality. B. Mann and S. L. Israel, Philadelphia.—p. 42.
Concepts of Endocrinology. S. J. Essenson, New York.—p. 44.

New England Journal of Medicine, Boston

209: 117-166 (July 20) 1933

Reconstructive Surgery in Chronic Arthritis. P. D. Wilson and R. B. Osgood, Boston.—p. 117.
Pathology of Carcinoma of Buccal Mucosa in Relation to Results of Treatment. C. C. Lund, Boston.—p. 126.
Syphilis in Relation to Cancer of Buccal Mucosa. C. C. Lund, Boston.—p. 131.
Survey of Resources for Patients with Heart Disease in Clinics and Hospitals of Boston. Mabel R. Wilson, Boston.—p. 135.
Study of Resources for the Care of Cardiac Children in Boston. Mrs. T. G. Abbott, Boston.—p. 137.
The Social Problem of the Child with Heart Disease as Seen in Cardiac Clinics of Massachusetts General Hospital. Edith Mortimer Terry, Boston.—p. 141.

209: 167-218 (July 27) 1933

Studies on Tumor Metastasis: III. Distribution of Metastases in Carcinoma of Large Intestine. S. Warren, Boston.—p. 167.
Volume and Hemoglobin Content of Red Blood Corpuscles in Light of Recent Knowledge of Anemia. C. W. Heath, Boston.—p. 173.
Perinephric Abscess. C. S. Swan, Boston.—p. 180.
Prolonged Bed Rest Treatment in Pulmonary Tuberculosis. P. Dufault, Rutland, Mass.—p. 184.
Ectopic Pregnancy. J. F. Curran and R. H. Goodale, Worcester, Mass.—p. 189.
Hereditary Aspect of Arteriolar (Essential) Hypertension: Study of Three Generations of a Family. D. Ayman, Boston.—p. 194.
*Diverticulosis and Diverticulitis of the Colon. S. A. Wilkinson.—Boston.—p. 197.
Esophageal Ulcer in the New-Born. M. M. Brown, North Adams, Mass., and E. Kellert, Schenectady, N. Y.—p. 202.

Diverticulosis and Diverticulitis of the Colon.—Wilkinson reviews the literature on the etiology, pathology and treatment and discusses a method of treatment of diverticulosis and of the milder cases of diverticulitis. It seems more logical to him to attempt to keep the stools formed, to attain one normal evacuation daily, to prevent overactive peristalsis and to decrease intra-intestinal pressure. These aims are not always to be achieved, but they can be approximated in all cases and, by carrying them out, many threatening cases of diverticulitis can be made to quiet down. Rest in bed for the initial period of treatment, usually two weeks, is of the greatest value and cannot be ignored. The diet, a bland, low residue, nonirritating one, should have as a basis chiefly carbohydrate foods. At first it should contain no vegetables, fruits or fruit juices. All fluids and foods should be warm. Rectal impaction should be watched for by frequent rectal examinations and prevented by the rectal instillation of a few ounces of warm olive or corn oil. If the stool has reached the rectum, this simple measure usually suffices to cause an adequate evacuation. If the patient complains of an increase in abdominal pain or gas, a small enema (1 or 2 pints) of warm saline solution gives prompt relief. Of the fruit juices, orange juice taken hot and diluted is usually the least irritating. This should not be given until the movements are well formed and are becoming regular. Tomato juice is poorly tolerated and is better omitted. All forms of spices and condiments, iced drinks, fresh fruits, the skins or seeds of fruits and vegetables and coarse bread should be forbidden. Medication by mouth is of little value. Tincture of belladonna, however, seems to alleviate the distress from gas and promote a more natural type of intestinal activity. All forms of purgatives, laxatives and even liquid petrolatum should be prohibited.

New Orleans Medical and Surgical Journal

86: 77-146 (Aug.) 1933

Gastro-Intestinal Problems of Vital Significance. E. H. Gaither, Baltimore.—p. 77.
*Treatment of Menstrual Disorders by Injection of Blood from Pregnant Donors: Preliminary Report. J. T. Witherspoon, New Orleans.—p. 85.
Diagnosis and Treatment of Enlarged Thymus. R. E. de la Houssaye, New Orleans.—p. 91.
Roentgen-Ray and Radium Therapy. J. R. Williams, Houston, Miss.—p. 96.
New Method of Syringe Transfusion. W. H. Gillentine and M. E. DeBakey, New Orleans.—p. 100.
Septal Deformities. G. E. Adkins, Jackson, Miss.—p. 102.
*Transmission of Tularemia by the Domestic Cat. M. M. Collins, Hosston, La.—p. 105.
Surgical Parotitis: Report of Case Complicating Tonsillectomy. A. A. Keller, New Orleans.—p. 106.
Contact Dermatitis: Report of Four Cases. B. G. Efron, New Orleans.—p. 112.

Treatment of Menstrual Disorders.—Witherspoon treated twenty-five cases of functional disorders of menstruation by the injection of blood from pregnant donors. The technic that he employed was to withdraw 10 cc. of venous blood from the cubital vein of a woman in the early months of pregnancy and to inject it immediately in the buttocks of the patient. The injections were given at weekly intervals when the treatment was indicated. From the hormone test described by Frank and Zondek, 10 cc. of venous pregnancy blood contains from 30 to 100 units of the anterior pituitary luteinizing factor and a variable amount of estrin. Therefore, 10 cc. was chosen arbitrarily as the desired dosage because of the lack of local symptoms it produces when injected into the buttocks, and because Zondek has pointed out that small doses are safer when it is desired to bring about the normal processes of ovulation and luteinization, since there is danger, if too great luteinization takes place before ovulation can occur, that the ovum will be imprisoned within the luteinized follicle. The author divides his series of cases into four groups and discusses them separately: eight cases of menorrhagia and metrorrhagia, twelve of amenorrhea, three of primary dysmenorrhea and two of menopausal disturbances.

Transmission of Tularemia.—Collins reports the case of a man, aged 33, who required medical treatment because of an infection following the bite of a cat. The patient gave a history of having been bitten on the index finger of the left hand by a 6 months old kitten, fourteen days previously. The abrasion became sore in three or four days and this was followed by a chill, fever, headache and general malaise. Since that time he has had several chills and continuous fever. At the time of examination, he had an indolent ulcer on the index finger of the left hand. The epitrochlear gland showed evidence of suppuration, and the axillary glands were tender and swollen. An incision was made over the epitrochlear gland and drainage instituted. The only other treatment used consisted of hot local applications and general systemic measures. The patient made a slow but progressive recovery. At the time of the first examination, a specimen of blood was taken which showed a positive agglutination with Bacterium tularense. The cat was secured and a specimen of blood was taken from the heart. This specimen and another specimen of the patient's blood showed the patient's blood positive to Bacterium tularense in a dilution of 1:1,280, and positive to Alcaligenes abortus in a dilution of 1:320. The cat's blood gave a positive agglutination to Bacterium tularense in a dilution of 1:80 but was negative to Alcaligenes abortus. The author believes that this proves serologically that the cat may be a carrier to human beings.

Northwest Medicine, Seattle

32: 265-310 (July) 1933

Trend of Venereal Diseases in Oregon. T. Clark, Lida J. Usilton and F. D. Stricker, Portland, Ore.—p. 265.
Surgical Progress in 1932. R. D. Forbes, Seattle.—p. 273.
Medicolegal Racketeering. W. Kelton, Seattle.—p. 279.
Changing Conceptions in Therapeutic Diets. Leila Wall Hunt, Pullman, Wash.—p. 282.
Nutritional Deficiencies as Suggested by Study of One Hundred Diet Histories. C. H. Hofrichter and May Brossois, Seattle.—p. 289.
Diet in Its Relation to the Teeth of the Pregnant Woman and Her Offspring. A. Mathieu, Portland, Ore.—p. 292.
Hemangioma of Vertebra. J. Aspray, Spokane, Wash.—p. 295.
Substernal Goiter: Its Recognition by Roentgenologic Examination. D. L. Palmer and N. W. Jones, Portland, Ore.—p. 296.
Medical Economics: Modern Medical Evaluation. H. G. Wright, Seattle.—p. 298.

Ohio State Medical Journal, Columbus

29: 465-528 (Aug. 1) 1933

*Thrombosis of Inferior Vena Cava and Extensive Skin Necrosis Following Scarlet Fever: Recovery: Report of Case. W. H. Bunn, Youngstown.—p. 485.
Pathologic Hemorrhage. R. L. Haden, Cleveland.—p. 487.
Consideration of Late Effect of Head Injuries. H. E. LeFever, Columbus.—p. 493.
Management of Occipitoposterior Positions. G. A. Palmer, Akron.—p. 496.

Thrombosis of the Inferior Vena Cava and Necrosis.—Bunn reports a case of skin necrosis occurring in scarlet fever accompanied by thrombosis of the inferior vena cava. The patient is now (eleven years later) in good health, excepting that he has varicose ulcers on both ankles. There is deep scarring of the left hip and there are prominent veins on the abdomen. Canalization of the thrombus of the inferior vena cava was evidently fairly complete, for there is no marked edema of the legs and no retarded development. During the fall of 1928 a sluggish varicose ulcer developed on the left ankle and in 1932 another on the right ankle. It is difficult to keep these healed. The abdominal collateral venous circulation is still active, as evidenced by definite distention of these veins. The lateral veins of the abdomen have remained larger than the anterior, which sign helps to confirm the diagnosis of thrombosis of the vena cava. The author feels that this blocking must have occurred below the level of the renal veins, else the outcome would probably have been fatal. The possibility of a concomitant infection of scarlet fever and diphtheria must be considered, in spite of a single negative throat culture. This impression was strengthened by the appearance of a paralysis of the soft palate, which is often seen in diphtheria. What influence the diphtheria antitoxin might have exerted in the production of the hemorrhagic condition cannot be stated. The author knows no method of proving this relationship. However, the patient had never had any serum previous to this illness and consequently could not have been sensitized.

Public Health Reports, Washington, D. C.

48: 839-868 (July 21) 1933

*Further Studies on Relationship of Viruses of Rocky Mountain Spotted Fever and São Paulo Exanthematic Typhus. R. R. Parker and G. E. Davis.—p. 839.
Heating Effect of Very High Frequency Condenser Fields on Organic Fluids and Tissues. J. W. Schereschewsky.—p. 844.

48: 869-906 (July 28) 1933

Incidence of Illness Among Male Industrial Employees in 1932 as Compared with Earlier Years. D. K. Brundage.—p. 869.
Dermatitis from Chemicals Used in Removing Velvet Pile. L. Schwartz and L. Tulipan.—p. 872.
Additional Notes on Preparation and Examination of Thick Blood Films for Malaria Diagnosis. W. H. W. Komp.—p. 875.

Rocky Mountain Spotted Fever.—Parker and Davis describe tests which show that the serums of guinea-pigs recovered from Rocky Mountain spotted fever have a degree of protective value against the virus of São Paulo exanthematic typhus that is essentially specific, and that guinea-pigs recovered from Rocky Mountain spotted fever have as high a degree of immunity against the virus of São Paulo typhus as they have against that of spotted fever. Thus far only two tests have been made to determine the degree of immunity of São Paulo typhus-recovered guinea-pigs to Rocky Mountain spotted fever. In both instances the guinea-pigs remained afebrile. These data, together with the authors' previous observations, suggest that São Paulo exanthematic typhus and Rocky Mountain spotted fever are immunologically identical.

Southwestern Medicine, Phoenix, Ariz.

17: 215-250 (July) 1933

Treatment of Bone and Joint Tuberculosis. J. W. Flinn, R. S. Flinn and Z. M. Flinn, Prescott, Ariz.—p. 215.
Tuberculosis from the Standpoint of the Pediatrician. W. P. Sherrill, Phoenix, Ariz.—p. 220.
Refractive Errors in Their Relation to General Medicine. H. L. Franklin, Phoenix, Ariz.—p. 223.
Gas Gangrene: Causes and Treatment. H. Rice, Morenci, Ariz.—p. 225.
Transurethral Prostatic Resection for Patients Who Constitute Poor Risks. G. J. Thompson, Rochester, Minn.—p. 229.
Observations on Prostatitis. F. Farman, Los Angeles.—p. 232.
*Belated Serum Treatment of Sequelae of Diphtheria. E. C. Houle, Nogales, Ariz.—p. 235.
Poliobulbar Encephalitis: Case Report. H. Leigh, El Paso, Texas.—p. 238.
*Granulopenia: Report of Case Following Injection of Gold and Sodium Thiosulphate. E. W. Rheinheimer and L. M. Smith, El Paso, Texas.—p. 239.

Belated Serum Treatment of Diphtheria.—Houle reports three cases of paralysis that developed in an epidemic of relatively few cases, so mild in symptomatology as to escape the diagnosis of diphtheria. None of the patients had received original antitoxic treatment. Relatively late specific treatment with antitoxin produced gratifying rapid and a complete cure of the paralysis. The author infers that antitoxin is often given in inadequate quantities and for an inadequate period and that, on the development of paralysis, antitoxin should again be administered, with a proper safeguard against sensitization. In one of the desperately ill patients treatment was begun approximately fifty days after the diphtheric inflammation, beginning with 5,000 units, followed by 10,000 and 10,000 and 6,000 units. In the meantime the patient became progressively weaker and a convergent strabismus developed. No improvement whatever was noted for eight days, after which date progress was rapid and continuous. About one month later the boy was walking. He was naturally weak, with persisting evidence of cardiac and renal impairment, but he had recovered full voice, vision, deglutition and respiration. Now, after a lapse of eight years, he is in perfect health. In another case, two weeks after apparent recovery, the patient developed paralysis of the palate and of both legs; 20,000 units of antitoxin produced complete recovery in the third week.

Granulopenia.—Rheinheimer and Smith present a case of granulopenia, the symptoms of which developed a few hours after a second injection of gold and sodium thiosulphate, which was used in the treatment of a chronic discoid lupus erythematosus. There is no positive proof that the gold was responsible for the condition, but the history is suggestive of a causal relationship. The patient, a woman aged 58, complained of red spots on the face, which she had noticed for six months. Examination revealed the urine to be normal, red blood cells 4,500,000, white blood cells 8,000, neutrophils 72 per cent, small lymphocytes 24 per cent, large lymphocytes 3 per cent, eosinophils 1 per cent, and hemoglobin 90. The patient was given 40 mg. of gold and sodium thiosulphate intravenously. This was well tolerated. Six days later, a second similar injection was given. An hour after the ingestion of ice cream, the patient became nauseated and vomited. During the same night she had a chill lasting two hours and followed by high temperature. The following day a generalized erythematous rash appeared, accompanied by slight swelling of the hands and feet but no pain. She was thought to have a gold reaction and was given sodium thiosulphate intravenously. This was repeated after two days. In four days the rash had faded and the temperature was normal. The next day she had a severe chill followed by high fever and profuse sweating. A deep erythematous rash appeared over the entire body. The hands, feet and face became swollen. At this time the temperature was 104 F., pulse 104, respiration 18, red blood cells 4,500,000, white blood cells 3,500, neutrophils 32 per cent, small lymphocytes 58 per cent, large lymphocytes 10, and nuclear index 3. The following day the patient was extremely weak and complained of severe pains in all the joints. The tongue, oral cavity and pharynx were deeply congested. The gums, inner surfaces of the cheeks, uvula and anterior pillars were covered with patchy, curdled milklike flakes resembling thrush. The temperature remained high. On this day injections twice daily of 10 cc. of pentnucleotide were started. Five days later the patient began to show improvement. Recovery henceforth was uneventful and the

patient has remained well to the present time. During the course of the illness the urine, blood culture and Wassermann test were negative.

Virginia Medical Monthly, Richmond

60: 265-330 (Aug.) 1933

*New Treatment for Fractures of the Os Calcis. R. V. Funsten, University.—p. 265.
Pyelonephritis, with Especial Reference to Etiology. B. E. Harrell, Norfolk.—p. 268.
Some Results of Serum Therapy in Lobar Pneumonia. C. P. Ryland, Jr., Binghamton, N. Y.—p. 272.
Exophthalmic Goiter: Review of Our Present Knowledge of the Etiology and Pathology of the Disease. R. D. Jones, Jr., Norfolk.—275.
Analysis of the Work of the First Year of the Allergy Clinic of the University of Virginia Medical School. O. Swineford, Jr., University.—p. 281.
Human Ovarian Responses to Extracts of Pregnancy Urine: Preliminary Report. E. C. Hamblen, Durham, N. C.—p. 286.
Growth and Development. W. F. Burdick, Chevy Chase, D. C.—p. 290.
Diagnosis and Treatment of Benign and Malignant Conditions of the Uterine Body. W. Neill, Jr., Baltimore.—p. 293.
Rupture of Uterus: Report of Two Cases. E. S. Groseclose, Lynchburg.—p. 297.
Problems of Acute Female Pelvis: Diagnostic: Economic. E. L. Kendig, Victoria.—p. 302.
Poliomyelitis. J. L. Hamner, Mannboro.—p. 304.
Pulmonary Tuberculosis in Childhood. L. R. Broome, Catawba Sanatorium.—p. 307.
The Rôle of the Practicing Physician in the Control of Syphilis. R. A. Vonderlehr, Washington, D. C.—p. 309.
Peripheral Vascular Reactions: Some Facts of Clinical Significance. R. H. Wood, Atlanta, Ga.—p. 311.
Medicine as She's Spoke. N. T. Dulaney, Bristol, Tenn.—p. 314.

Fractures of the Os Calcis.—In fractures of the os calcis, Funsten insists on a roentgenogram taken from an angle of 45 degrees, through the posterior aspect of the foot showing a projection of the lateral surfaces of the os calcis. In addition, anterior-posterior and lateral views are made. In the interpretation of these roentgenograms an attempt is made to determine whether there is an upward displacement of the posterior fragment, a lateral displacement of the fragments or an involvement of the subastragaloid joint, and whether there is involvement of the calcaneocuboid joint. If any of these conditions is present, operative treatment is indicated, in which instance a compression bandage is applied to reduce the swelling. The patient is allowed to remain quiet in bed for a period of about one week, thereby giving time for tissue reactions. After this, the achilles tendon is lengthened by open exposure. The sliding method of lengthening has been the author's choice. Care should be taken that lengthening does not exceed three-fourths inch. This reduces resistance when upward displacement of the distal fragment of the os calcis is corrected and reflexly inhibits the action of the gastrocnemius during convalescence. The wound is closed with number 1 plain catgut. The foot is turned so that the inner malleolus is against a sandbag. An ordinary 3 inch rolled bandage is then placed in a curved position under the external malleolus and the fragments are impacted with a mallet. Next, a nick is made through the skin just anterior to the attachment of the achilles tendon, superior to the border of the os calcis, on the outer side of the foot. Through this a number 24 urethral sound is passed to the inner side, in which a small incision is made to allow the point to come through over the upper surface of the os calcis. With the toes against the table and with a lever board between the surgeon's chest and the arch of the foot, traction is placed on the sound in such a way as to bring the posterior portion of the os calcis down into its normal position, restoring the arch of the foot. If lateral impaction is not complete, following the restoration of the posterior fragment of the os calcis, reimpaction is done. The sound is then removed, a suture is placed in each wound and a cast is applied, including the bandage under the external malleolus to maintain impaction of the lateral fragments. Two pieces of felt are placed in the arch and traction is made downward on the heel and toes. To insure proper arching, the lever board is pressed into the arch while the plaster is hardening. The cast is allowed to remain for six weeks, when it is bivalved and motion in the joints begun. Weight bearing is started at ten weeks, when the support of the cast is supplemented by a high felt arch support, Thomas heel and single upright brace, to prevent strain on lateral motion. The disability has been greatly reduced in the author's fifty-two cases in which he used this procedure.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

21: 1-172 (July) 1933

Sympathectomy as an Experiment in Human Physiology. J. P. Ross.—p. 5.
Parathyroid Tumor: Case. G. Keynes and H. Taylor.—p. 20.
Posttraumatic Epidermoid Cysts of Hands and Fingers. E. S. J. King.—p. 29.
Investigation of Seven Hundred and Forty-Two Cases of Hematuria. R. K. Debenham.—p. 44.
*Renal and Ureteric Calculi of Unusual Size: Repeated Formation of Calculi: Case. E. Freshman.—p. 63.
Osteochondritis Dissecans. H. A. T. Fairbank.—p. 67.
Anatomy of Peripheral Sympathetic Nervous System. H. H. Woollard and R. E. Norrish.—p. 83.
*Mesenteric Cyst as Cause of Intestinal Obstruction. W. A. Steel.—p. 104.
Vesical Papilloma with Widespread Metastases: Case. M. F. Nicholls.—p. 108.
Surgery of Sympathetic Nervous System. G. E. Gask.—p. 113.
Pied Forcé or March Foot. H. Dodd.—p. 131.

Renal and Ureteral Calculi.—Freshman presents a case of continuous stone formation in the urinary tract which illustrates the enormous size that may be obtained by calculi before giving rise to symptoms severe enough to induce the patient to seek relief. The patient underwent six operations during a period of nine years; on seven occasions he was relieved of a calculus or calculi under general anesthesia, and once the calculus was voided spontaneously. None of the stones had a core of pure uric acid, which might have accounted for their existence some time before becoming opaque to the x-rays. Fifteen months after his last operation, the patient is in excellent health, and on roentgen examination his right kidney appears to be free of stones. Intravenous pyelography shows good excretion in five minutes and almost normally shaped pelvis and calices.

Mesenteric Cyst.—Steel states that it is usually during a laparotomy for some other condition that the presence of a mesenteric cyst is noted. Rarely do these cysts assume such a prominent position as to become the reason for operation, either in virtue of their size or because of some complication. The author reports the case of a girl, aged 7, in whom such an operation was necessary. The abdomen was opened under spinal anesthesia by a right paramedian incision. Distended loops of small intestine were at once displayed. The seat of obstruction was found in the ileum about two feet from the cecum. Numerous cysts were present throughout the mesentery. One large cyst had kinked and dragged its weight across the ileum, leading to complete obstruction. The cyst and mesentery, together with two or three inches of intestine on each side of the cyst, were resected and a lateral anastomosis was performed. The abdomen was closed without drainage. The patient made an uneventful recovery. Intestinal obstruction may arise in various ways, dependent on the size, position and mobility of the cysts and their situation in the mesentery. The resulting acute obstruction is purely mechanical and is brought about by direct pressure or traction on the intestine, while the occlusion may be completed by adhesions or kinks or, in rare instances, by volvulus of the intestine. The condition may be considered or suggested by the history, by isolating a mobile cyst, or by the pain, vomiting, diarrhea or constipation that arise from the pressure of the cyst. The diagnosis even in uncomplicated cases is difficult, but in the presence of intestinal obstruction an accurate diagnosis is practically impossible.

British Medical Journal, London

2: 89-136 (July 15) 1933

Unity of Gastric Disorders. A. F. Hurst.—p. 89.
Treatment of Chronic Inflammatory Diseases of Mouth, Pharynx and Larynx by Local Application of Ultraviolet Rays. A. Eidinow.—p. 94.
*Acute Scarlatiniform Dermatitis Following Injection of Toxoid-Antitoxin. G. Chesney.—p. 98.
Treatment of Ringworm of Scalp with Thallium Acetate. D. R. Lewis and W. A. Lloyd.—p. 99.
*Posterior Fossa Compression Syndrome. L. Rogers.—p. 100.
*Malaria Due to Plasmodium Ovale Stephens 1922: Case. N. H. Fairley.—p. 101.

Dermatitis Following Toxoid-Antitoxin.—Chesney presents a case of exfoliating dermatitis, which occurred in a girl of 16 following the injection of two doses of 1 cc. of toxoid-

antitoxin given within a period of seven days. He believes that the dermatitis was related to the two injections, as the patient showed acute sensitivity to serum and to the products of metabolism of the diphtheria bacillus, which are found in toxoid, and which, in highly sensitive people, may cause unusually troublesome local or general reactions. Intradermal tests with serum, peptone and veal infusion confirmed that the patient was unusually sensitive to serum and that the minute amount of serum in the original injection of 1 cc. of toxoid-antitoxin had caused the dermatitis. There was no trace of asthma or any other symptoms of allergy in the previous history of the patient or of her family.

Posterior Fossa Compression Syndrome. — Rogers describes a syndrome in which the patient collapses and respiration stops, while the heart continues to beat vigorously. If nothing is done the heart soon ceases to beat, the patient previously becoming more and more cyanosed. A failure of the respiratory center evidently takes place; the cardiac center being apparently less vulnerable to the effects of sudden compression, the heart action continues. Artificial respiration results in the diminution of the cyanosis, and patients have been kept alive for ten or twelve hours while artificial respiration has been kept up; but as soon as this has flagged the cyanosis has increased, the heart has slowed, and, when artificial respiration has finally ceased, the patients die. The cause of the syndrome would appear to be the relative vulnerability to pressure of the respiratory as compared with the cardio-inhibitory center. The compression may be produced by hemorrhage into the posterior fossa or by an intracranial tumor or abscess and, in the latter instances, may result from edema in association with the lesion. This was apparently the mechanism in the case that the author reports. Recognition of the syndrome enabled him to relieve the condition and to deal subsequently with its cause, a cerebellar cystic glioma. He states that prompt radical treatment may relieve the sufferer. When in a case of raised intracranial tension—whether from hemorrhage, new growth or abscess—respiratory failure occurs, prolonged efforts at artificial respiration should not be carried out, but relief of medullary compression should be secured by an emergency decompression of the posterior fossa. Oxygen administered through an intratracheal catheter, as in his case, may enable the operation to be undertaken; but, failing this, an emergency tracheotomy or laryngotomy would be advisable to supply the oxygen by this route. It might be objected that, rather than the performance of such a radical procedure, a reduction of intracranial tension with relief of medullary compression might be brought about by a ventricular tap or by intravenously administered hypertonic saline solution or dextrose; but such means would appear less certain and would produce only transitory effects. In the syndrome of compression of the posterior fossa, therefore, the indication would appear to be an extensive mechanical relief of pressure.

Malaria.—Fairley cites a case which was an instance of infection with the fourth species of malarial parasite—that is, Plasmodium ovale Stephens 1922—contracted during a tour in West Africa. Throughout his stay in Africa, the patient had consistently taken prophylactic quinine, and this is the probable reason for the long incubation period, unless a previous fever of two days' duration can be interpreted as representing the primary malarial attack. The species of parasite was suspected on clinical grounds when the laboratory reported atypical quartan malaria, when the patient, though at the onset manifesting quartan, later showed a tertian periodicity. Another peculiar feature was the late time of onset of the rigors, which occurred between 6:30 and 7:30 p. m., whereas malarial fever generally commences before or about midday. The biochemical and hematologic observations were of interest. Hemoglobinemia was not evident at the time the plasma was examined, but the urobilinuria and hyperbilirubinemia indicated that the blood destruction usually associated with malarial fever was going on. Bile pigments in the urine are unusual in malarial fever and probably originated from a mild toxic hepatitis in this instance. The reticulocytosis reached a maximum of 6.3 per cent eight days after the initiation of specific treatment. This is usual in malaria, for, once the parasites are controlled or destroyed, regenerative activity of the bone marrow results in reticulocytosis and new blood formation.

Journal of Pathology and Bacteriology, Edinburgh

37: 1-168 (July) 1933

Some Effects of Artificial Pneumothorax on Circulation. R. Hilton.—p. 1.
Filtration of Spirochetes Through Graded Collodion Membranes. E. Hindle and W. J. Elford.—p. 9.
Active Immunization of Pheasants Against Fowl Tumors. C. H. Andrewes.—p. 17.
Further Serologic Studies on Fowl Tumor Viruses. C. H. Andrewes.—p. 27.
Rats as Carriers of Streptobacillus Moniliformis. Winifred I. Strangeways.—p. 45.
Multiple Toxins Produced by Some Organisms of the Clostridium Welchii Group. A. T. Glenny, Mollie Barr, Mona Llewellyn-Jones, T. Dalling and Helen E. Ross.—p. 53.
*Cultivation of Virus of Rift Valley Fever. R. D. Mackenzie.—p. 75.
Effect of Experimental Portal Congestion on Absorption and Excretion of Water. J. McMichael and F. H. Smirk.—p. 81.
Formation of Green Pigment from Hemoglobin by Pneumococcus. P. D. Hart and A. B. Anderson.—p. 91.
Virus Disease of the Canary of the Fowl Pox Group. F. M. Burnet, with note on microscopy by J. E. Barnard.—p. 107.
Congenital Cystic Disease of the Lungs Associated with Giant Cell Hyperplasia of Lymph Glands. D. H. Collins.—p. 123.
Observations on Striated Muscle. W. G. Millar.—p. 127.
Cellular Response of Vitreous Humor to Injections of Bacteria, Blood and Vital Dyes. W. A. Gray.—p. 137.
Application of Vital Staining to Histogenesis of Rous Sarcoma I. A. Haddow.—p. 149.

Rift Valley Fever.—Mackenzie inoculated four mice with virus of Rift Valley fever, and two days later one of these showed definite symptoms associated with the infection and was therefore killed. The heart blood was drawn off and two drops of the blood were added to each of a series of 50 cc. Erlenmeyer flasks containing 5 cc. of Tyrode's solution and chick embryo made up in the proportions used by Rivers. The flasks were then plugged and incubated at 37 C. for three days. Three days later, subcultures were made by transferring 0.2 cc. of the fluid from each of the original flasks into a new series, thus giving a dilution of 1:25. At the same time, two flasks were selected at random and the titer of the virus in them was estimated by the inoculation of progressive dilutions into mice. From the remaining flasks two mice each were inoculated. The culture fluid, diluted 1:10,000, in one case killed three mice out of three and in the other case one mouse out of three, and this may be taken as the approximate titer of the fluid. When the next subculture was made, one flask was set aside in the cold, while the rest were incubated, and then, after three days, the titer of the unincubated flask was compared with one of those that had been kept at 37 C. The titer of the virus in the incubated flask was considerably the greater. After this, subcultures were made every three or four days and, when the experiment was voluntarily stopped, it had reached the twelfth subculture. At the eleventh subculture the titer was again estimated and it was seen that the titer of the virus remained more or less constant. After the twelfth subculture the fluid from three of the incubated flasks was pooled, filtered through a Seitz filter and inoculated into mice, which died in the usual time with symptoms of Rift Valley fever confirmed by histologic examination of the livers. As the dilution of the inoculum in the primary culture and in each of the twelve subcultures has been approximately 1:25, the final dilution of the infected blood must be about 1 in 1.5×10^{18}. Infected blood, diluted with Tyrode solution alone or with broth or serum and incubated at 37 C., shows a gradual loss of titer and is generally completely inactive in about seventy-two hours. The author claims that he has obtained a true increase in virus of Rift Valley fever by in vitro cultivation and that the activity of the subcultures cannot be explained in any other way.

South African Medical Journal, Cape Town

7: 417-452 (July 8) 1933

Benefit Societies. G. J. Joubert.—p. 419.
Nasal Sinus Infection. L. E. Lane.—p. 421.
Liquor Hydrargyri Perchloridi B. P. and Digitalis in Treatment of Typhoid. N. Faichnie.—p. 423.
Bathing in Thermal Waters. F. G. Cawston.—p. 424.
Membranous Dysmenorrhea. J. F. Jefferies.—p. 425.
Diseases of Pituitary Body. C. D. Brink.—p. 426.
Treatment of Skin Conditions in General Practice. I. Gluckman.—p. 430.

7: 453-488 (July 22) 1933

Some Changing Points of View Regarding Tuberculosis. D. P. Marais.—p. 455.
Chirurgy of Hypophyseal Tumors with Description of Interesting Case. R. S. Verster.—p. 461.
Guist-Lindner Operation for Detached Retina: Case Report of a Good Result. E. A. Seale.—p. 464.

Gynécologie et Obstétrique, Paris

28: 97-240 (Aug.) 1933

*Surgical Treatment of Hemorrhage Resulting from Placenta Praevia. H. Paucot and M. Reeb.—p. 97.
Utero-Adnexal Tuberculosis. P. Brocq, P. Moulonguet and P. Gibert. —p. 146.
Treatment of Utero-Adnexal Tuberculosis. R.-L. Rochat.—p. 220.

Treatment of Hemorrhage in Placenta Praevia.—Paucot and Reeb present a critical evaluation of the results obtained by numerous authors, including themselves, with different methods of treatment of hemorrhages in placenta praevia. The systematic practice of surgical methods is not justified, because the majority of cases are amenable to a wide rupture of the fetal membranes. When rupture of the membranes assures hemostasis and is followed by spontaneous delivery, this method is unequaled from the standpoint of maternal safety, although it is mediocre for the child. In grave cases in which this method is inapplicable or ineffective, low cesarean section has proved to be superior to any other obstetric or surgical procedure in safeguarding the life of the mother and that of the child. The indications for low cesarean section are: (1) the necessity of checking immediately the hemorrhages of gestation or labor, independent of the condition of the cervix, of the type of insertion of the placenta or of the life of the fetus; (2) the difficulties inherent in the cervix, in the type of insertion of the placenta, and in complex dystocias; (3) failure of obstetric treatment, and (4) desire to save the life of the infant. In cases of suspected infection, low cesarean section may also be employed without grave risk for the mother, but a confirmed infection and the poor general condition of the woman often demand hysterectomy (subtotal, Porro) in preference to other complex obstetric methods. Spinal anesthesia is preferred because of its hemostatic properties, if the minimum arterial tension is nearly normal; in hypotension, ether anesthesia is preferable. Preoperative or postoperative blood transfusion is an effective treatment of hemorrhage or shock.

Rivista di Clinica Pediatrica, Florence

31: 1025-1152 (Sept.) 1933

Antidiphtheritic Serotherapy in Pediatric Clinic of Florence in Years from 1894 to 1932. C. Comba.—p. 1025.
Morbidity and Mortality Through Diphtheria and Individual Factors. D. Moggi.—p. 1055.
Glycoregulation in Relation to Psychic Secretion of Digestive Glands. G. Sanpaolesi.—p. 1076.
Infantile Acrodynia (Feer's Disease—Infantile Vegetative Neurosis). G. Frola.—p. 1081.
*First Results of Treatment of Parapneumonic Metapneumonic Empyema of Infancy with Intrapleural Injections of Acridine Derivatives. G. B. Costa Staricco.—p. 1091.
Modification of Metabolism of Creatine Bodies in Avitaminosis: Modifications in Experimental Scurvy. G. A. Piana.—p. 1098.

Treatment of Empyema of Infancy.—Costa Staricco treated eighteen patients suffering from empyema and ranging in age from a few months to 5 years. Of these, sixteen were metapneumonic and two were parapneumonic. Bacteriologic examination demonstrated the diplococcus in sixteen patients and the diplostaphylococcus in two. All but one showed complete recovery after treatment. Surgical intervention is seldom required after treatment. Only three of the eighteen patients necessitated subsequent operation: two had advanced bilateral empyema and the third, a nursling aged 11 months, had pleuropneumonia of the right upper lobe and concomitant empyema throughout the pleural cavity. The author's technic consisted of aspiration of the largest possible amount of pus with a trocar or large needle attached to a syringe and introduction of a solution of 0.1 per cent of chloride of 3,6 diamine 10 methylacridine at body temperature. The pleural cavity is washed with this solution and afterward all the lavage fluid is drained out. Still without removing the needle, from 10 to 15 cc. of a 0.5 per cent solution of acridine or an amount of this solution corresponding to 0.005 Gm. of acridine per kilogram of body weight is injected intrapleurally. Generally from three to four injections are given five or six days apart. If, meanwhile, examination of the thorax reveals rapid reproduction of the pus, simple evacuating punctures should be made. Following treatment the pus becomes dense, gelatinous and sterile and disappears gradually. The temperature usually decreases after the first injection and general body improvement occurs. The author highly recommends this treatment for empyema.

Beiträge zur klinischen Chirurgie, Berlin

158: 225-336 (Sept. 13) 1933

Local Circulatory Disturbances of Testicle. H. Hellner.—p. 225.
*Bile Peritonitis. J. Fodor.—p. 270.
Value of Circulatory Hormone Produced in Pancreas in Prognosis and Operative Treatment of Gangrene of Extremities. F. Prochnow.—p. 283.
Vitamins and Wound Healing. H.-J. Lauber.—p. 293.
Contribution to Surgery of Liver (Surgically Treated Hemangio-Endothelioma of Liver). G. Steinberg.—p. 303.
*Pressoreceptor Nervous System and Its Practical Significance in Surgery. W. Braeucker.—p. 309.

Bile Peritonitis.—Fodor reports two cases of bile peritonitis without visible perforation. It has been established experimentally that bile can pass through a pathologically altered gallbladder wall but not through a normal wall. It appears that bile can pass into the peritoneal cavity under the following clinical conditions: through a microscopic perforation of the extrahepatic bile tracts, especially of the gallbladder; from an anomalous duct in the hilus of the liver; from a perforation of a superficial intrahepatic bile duct, and from changes in the permeability of the bile ducts. The perforation may be healed at the time the exploration is made. Changes in the wall of the gallbladder may be brought about by pancreatitis. Transudation of sterile bile into the peritoneal cavity may result in an acute cholotoxicosis or in a cachectic choline poisoning leading slowly to death. The process may become encapsulated and heal. Infected bile may lead to fulminant peritonitis or to a chronic form with nephritis and characteristic bradycardia and fall in the blood pressure. The question as to which factor in the sterile bile acts as a toxic factor has not been definitely solved, the evidence pointing to bile acids and their salts.

A Pressoreceptor Nervous System.—Braeucker demonstrated in his studies on rabbits that the concept of a pressoreceptor nervous system as consisting of four nerves, the two superior cardiac nerves and the two carotid nerves, branches of the glossopharyngeus, is incomplete. He found the system to be represented anatomically by a very complex network of periarterial plexuses which spread from the cardiac plexus over the arch of the aorta, the common carotid artery, its bifurcation and its branches. The author concludes from his sectioning experiments that the afferent pressoreceptor paths are not limited to the four nerves as previously considered but are a part of the peripheral vegetative nervous system of the neck and the upper part of the thorax. He found the same anatomic relations in man with the additional observation that the pressoreceptor nervous system here extends to the thyroid gland and forms a plexus within the so-called thyroid capsule. Central stimulation of sectioned ends of pressoreceptor nerves causes a twofold stimulating effect on the medullary centers—vasodilatation and slowing of the heart. The significance of these facts in relation to surgery of the deep structures of the neck is evident. The question of the possible reflex effect of trauma to the nerve plexus of the thyroid capsule in the course of delivery and resection of the gland presents itself. The author found that signs of bulbar paralysis developing in his animals in the course of dissection of the neck could be successfully combated by a timely venesection. He advances the theory that sudden death in the course of a thyroidectomy, and the so-called postoperative thyrotoxic crises, are reflex phenomena resulting from irritation of pressoreceptor nerves. He reports the histories of five patients with thyrotoxicosis, who developed in the course of a thyroidectomy grave signs of impending paralysis of the bulbar centers. Prompt venesection, with withdrawal of from 200 to 300 cc. of blood from the anterior jugular vein, gave immediate relief of these symptoms. He believes that the remarkable effect of venesection is due to lowering of the blood pressure and reflex diminution of irritative stimuli to the entire pressoreceptor system. To avoid undue irritation of the pressoreceptor paths in the course of a thyroidectomy, general anesthesia should be used with addition of local procaine hydrochloride blocking of the pressoreceptor paths. He injects the solution of procaine hydrochloride at the area of bifurcation of the common carotid artery, about the stem of the vagus (lower third of the ganglion nodosum) and into the area of the upper cervical ganglion and the stellate ganglion. Dangerous reactions occurring in spite of these measures are best treated by prompt venesection.

Wiener klinische Wochenschrift, Vienna

46: 1113-1136 (Sept. 15) 1933

Methods and Results of Roentgenologic Determination of Size of Heart. K. Weiss.—p. 1113.
*Investigations on Clinical and Biologic Significance of "Argentaffine" Cells of Gastro-Intestinal Tract: Significance of Argentaffine Cells in Pernicious Anemia. G. Erös.—p. 1119.
Relapses After Operations on Biliary Tract: Their Pathogenesis and Therapy. M. Künsztler.—p. 1122.
*Leukemic Diseases of Skin. L. Arzt.—p. 1125.
Otogenic Sepsis During Childhood. R. Leidler.—p. 1128.
Early Diagnosis of Pregnancy. P. Werner.—p. 1130.

Argentaffine Cells in Pernicious Anemia.—Erös studied the argentaffine cell system in the gastro-intestinal tract and was convinced that this cell system produces a hormone-like substance of vital significance. In examining the intestine of persons who had died from pernicious anemia, he found that the argentaffine system of the intestine is greatly atrophied. Not only is the number of argentaffine cells considerably reduced but their size has also changed and they contain fewer granules. He deduces from this observation that the argentaffine cell system both of the gastro-intestinal tract and of certain endocrine organs plays a part in hematopoiesis. He relates animal experiments by which he effected a considerable increase in the argentaffine cells. The intestinal tract of these animals was then used for preparing extracts, the administration of which to animals demonstrated that they promote blood formation and inhibit the development of anemia. The author realizes that a conclusive demonstration of the efficacy of the extract can be obtained only on human subjects. He tried it on a number of persons and found that it promotes blood formation. Extremely small doses of the extract effected an increase in erythrocytes, leukocytes and reticulocytes, while larger doses did not produce an increase and even were followed by a reduction in the formed elements of the blood. Further studies on this problem are still under way.

Leukemic Diseases of Skin.—In a classification of the leukemic dermatoses, Arzt shows that this subject is highly complicated. Corresponding to the two types of leukopoietic tissues, the leukemic dermatoses are differentiated into lymphatic and myeloid processes. Discussing the lymphatic processes, he directs attention to leukemic tumors that develop in the region of the superciliary arch and may become manifest in prominent ridges. The ears and particularly the nose may become involved, and a considerable increase in the size of the nose is a symptom that is especially likely to make the observer think of leukemia. If the process spreads further, the whole face and even the entire head may become involved and the characteristic aspects of leontiasis result. This leontiasis should be differentiated from the leontiasis that occurs in leprosy, because they differ in their etiology. Although the face is the site of predilection for leukemic tumors, they may occur at other sites, particularly in the region of the elbow, of the mammilla and of the penis. The decision whether a tumor is of a leukemic nature has to be made as a rule by the hematologic demonstration of a leukemic blood picture, but the histologic examination may prove helpful. Another cutaneous manifestation of leukemia, which differs from the localized tumors, is universal lymphomatosis of the skin. Other terms applied to this condition are leukemia cutis diffusa and leukemic erythrodermia. The author thinks that in every erythrodermia the possibility of an underlying leukemia should be considered, particularly if pruritus exists. He discusses the comparatively rare occurrence of a leukemic exanthem. It becomes manifest as a small papular exanthem and is localized especially on the trunk. The differential diagnosis of this disorder is difficult and must be based on accompanying symptoms, such as a generalized swelling of the lymph nodes. There are other cutaneous manifestations of chronic leukemic lymphomatoses, which lack characteristic clinical pictures and may appear as dermatitides, eczemas, erythemas, vesicular dermatoses, urticarial exanthems and cutaneous hemorrhages. The blood picture is generally the only means of diagnosing these disturbances correctly. Only lymphatic prurigo has more or less typical clinical aspects. In discussing the myeloid forms of leukemic skin diseases, the author calls attention to the cutaneous manifestations of chronic leukemic myelosis, characterized by nodular formations; that is, tumors of the skin. But here the face is not the site of predilection and the tumors reach at the most the size of a nut. A predisposition to hemorrhages is likewise noticeable. The author concludes by emphasizing once more the diagnostic significance of pruritus and of the hemogram.

Zeitschrift für Krebsforschung, Berlin

39: 417-498 (Sept. 12) 1933

Discussion of So-Called Acidotic Therapy of Malignant Growths. Anna Goldfeder.—p. 417.
Influence of Chemical Preparations on Growth and Disappearance of Transplantable Animal Tumors. Anna Goldfeder.—p. 421.
Studies on Immunity Against Inoculation Tumors: Conservation of Living Blastoma Cells Under Heterologous Conditions by Passages in Vivo. A. I. Wylegschanin.—p. 436.
Anemia of Carcinoma Rats. J. Putnoky.—p. 451.
*Nodular Myolysis of Tongue. A. H. Roffo.—p. 464.
Culture of Human Tumors in Vitro. Z. Zakrzewski and W. Kraszewski. —p. 471.
Bacteriologic Studies on Mouse Tumors. S. Ikeda.—p. 492.

Nodular Myolysis of Tongue.—Roffo describes a lesion of the tongue, which he designates as nodular myolysis. He states that, among the 800 cases of lingual cancers that came under his observation within the last four years, this is the second one of this nature. The anamnesis revealed that three years ago the woman first noted a nodule the size of a lentil, which gradually increased to the size of an almond. The growth was on the right side of the tongue and its longest diameter was parallel to the median groove. The nodule was hard but painless and was covered with mucous membrane of normal appearance. Removal of the nodule was followed by cure. The histologic examination disclosed that the lesion involved only the striated muscle fibers of the tongue. It was characterized by loss of striation, change in the structure of the contractile substance, destruction of the fibrils, lysis and complete vacuolation of the fibers. The author assumes a traumatic etiology, since other causes could not be detected.

Zentralblatt für Chirurgie, Leipzig

60: 2289-2352 (Sept. 30) 1933

Nephrotomy, Pyelotomy and Ureterotomy for Pelvic or Ureteral Stones. A. Läwen.—p. 2290.
*Neuroma and Carcinoid Tumor of Vermiform Appendix. H. Hellner. —p. 2293.
Peculiar, Erysipelas-Like Skin Manifestation in Acute Myeloblastic Leukemia: Case. M. Detlefsen.—p. 2303.
Contribution to Subject of Closed Pyopneumothorax. H. Widenhorn.—p. 2306.
*Advances in Operative Treatment of Ileus. I. Philipowicz.—p. 2311.
Adjustable Extension Clamps for Beds with Angular Iron Frames. W. Thomsen.—p. 2316.
Sectioning of Gray Sympathetic Branches in Toxic Nutritive Disturbances. J. Seiffert.—p. 2317.

Neuroma and Carcinoid Tumor of Vermiform Appendix.—In all so-called chronic or subacute forms of appendicitis in which the removed appendix shows no macroscopic or microscopic evidence of an inflammatory process of the mucosa, Hellner advises a search for alterations in the nervous structure of the appendix. He reports several such instances in which he found neuromas in the submucosal layer of the appendix. In addition, there is found at times a tumor formation usually referred to in the literature as carcinoid tumor of the appendix. Ehrlich of Kharkov and Masson of France have independently of one another advanced the neurogenic theory of the origin of this tumor. In his histologic studies, Masson has demonstrated the close relationship of the epithelial cells of the tumor to the nervous elements, which appears to establish a relationship between the neuromas and the so-called carcinoid tumor. Considered from a histopathologic point of view the tumor is a neuro-entodermal blastoma. This concept is favored by its benign nature, the presence of neuroma-like alterations in the submucosal layer and its close relationship to the nerve plexuses of the mucosal and the muscular layers. These tumors have no relation to carcinoma. They are not known to give rise to metastases. The author's patients who were operated on two and four years ago remained well. These tumors are sometimes found accidentally in the course of an abdominal operation, but more often are operated on because of an acute, subacute or chronic appendicitis. He regards the infection of the mucosa here as secondary to the obstruction of the lumen of the appendix by the tumor with resulting stasis

and infection. The author doubts the existence of true carcinoma of the appendix except as a secondary metastatic manifestation.

Advances in Operative Treatment of Ileus.—Philipowicz points out that the mortality rate in ileus fluctuates in published statistics between 40 and 60 per cent. The first notable lowering was reported by Morton of Rochester and by himself. Morton's mortality was 28.5 per cent, while the author's amounted to 27.7 per cent. In the last five years the author operated on forty-five patients with ileus and further reduced his mortality rate to 15.5 per cent. In analyzing the causes contributing to the improvement in results, he emphasizes earlier diagnosis and immediate operation. He objects to roentgenographic studies and the employment of high enemas. The short time required for the preparation of the operation is utilized to wash out the patient's stomach, to administer cardiac stimulants and to introduce 0.5 liter of physiologic solution of sodium chloride by hypodermoclysis. However, the main factor in the improvement of the results is the exclusive use of spinal anesthesia practiced by the author for the last six years. The ideal relaxation of the abdominal muscles obtained by this method of anesthesia permits of an easy eventration of the abdominal contents for the purpose of rapid orientation. The complete paralysis of the anal sphincter and the increased peristalsis following on the release of the obstructed intestine bring about an immediate and satisfactory emptying of the intestine by the natural route. The reposition of the abdominal contents and the closure of the abdominal incision are thus rendered easy. Because the patient is conscious, he is in no danger of aspirating his stomach contents. Surgical procedures on an emptied and now contracted intestine are easier and safer. It was the author's experience that these sick, frequently dehydrated and toxic patients tolerated well the spinal anesthesia. He considers the method by which the obstructed intestine is relieved by an enterostomy without investigation of the cause of obstruction faulty and dangerous. Primary resection should be performed by the expert and only under most favorable conditions; otherwise one should be content with the immediate life-saving procedure only. Early operation, the use of spinal anesthesia and postoperative intravenous infusion of hypertonic salt solution are the three main measures responsible for the improvement in operative results of ileus.

Novyy Khirurgicheskiy Arkhiv, Dnepropetrovsk

28: 145-288 (No. 110) 1933. Partial Index.

Reconstruction of Tip, Wings and Septum of Nose by T Shaped Graft from Neck. A. A. Limberg.—p. 147.
*Problems in Biliary Surgery. A. G. Brzhozovskiy.—p. 164.
Injuries of Knee Joint. A. Ozerov.—p. 191.
Subcutaneous and Open Traumatism of Kidney. I. G. Rabinovich.—p. 217.
Newer Methods of Free Autotransplants of Bone. P. M. Krasin and V. M. Osipovskiy.—p. 231.
New Clamps for Skeletal Traction. G. A. Vaynshenker.—p. 236.
Removal of Iron and Steel Fragments from Bronchi by Electromagnet Constructed by the Author. G. N. Ambrumyants.—p. 239.
*Pulmonary Suppuration Due to Aspiration of Foreign Body. A. L. Ginzburg.—p. 242.

Problems in Biliary Surgery.—On the basis of 165 operations on the biliary tracts, Brzhozovskiy analyses the surgical problem in this field. He considers stasis of the gallbladder an early stage of acalculous cholecystitis. Stasis of the gallbladder and acalculous and calculous forms of cholecystitis represent successive stages of the same inflammatory process. Operations in the acute stage are permissible and cholecystectomy is the operation of choice. Primary closure of the abdomen without drainage is indicated in properly selected cases of cholecystectomy and choledochotomy. Cholecystectomy in uncomplicated cases has a negligible mortality. A decisive lowering of mortality, as well as improvement in the late results, is to be expected only from earlier operations. Recurrence of pain after operations is caused principally by the persistence of infection in the biliary tracts.

Pulmonary Suppuration Due to Aspiration of Foreign Body.—Ginzburg states that suppurative processes in the lung, the result of aspiration of foreign bodies, are not infrequent. They occur in all ages, but with greatest frequency in childhood. The more common localization is the right lung, because aspiration of foreign bodies takes place, as a rule, by way of the right bronchus. The suppurative process may later extend to the opposite lung, as occurred in one of the author's cases. The recognition of the cause of suppuration in these cases depends primarily on the history and the slow, insidious development of the process frequently interpreted as a recurring pneumonia. One should not rely entirely on roentgenographic data. Any suspicion of a foreign body warrants a consultation with a laryngologist. The amount of involvement depends on the nature of the foreign body and the immunobiologic properties of the invaded organism. The treatment consists of bronchoscopic removal of the foreign body with secondary aspiration of the abscess. Even the neglected cases can be cured, as a rule. Surgical intervention becomes necessary in exceptional cases only.

Hospitalstidende, Copenhagen

76: 853-880 (Aug. 24) 1933

Nupercaine Anesthesia: Review of Application of Nupercaine as Local Anesthetic Together with Considerations Concerning "Largest Therapeutic Dose" of Substance on Basis of Cases of Nupercaine Intoxication Reported to Date. K. O. Møller.—p. 853.
*Syphilitic Disorders of Central Nervous System: C'td. E. Geert-Jørgensen, A. V. Neel and G. E. Schrøder.—p. 869.

76: 881-908 (Aug. 31) 1933

Folliculoma: Implantations in Peritoneum; Hemoperitoneum. S. V. Bagger.—p. 881.
Erythema Nodosum with Tubercle Bacilli in Blood: Case. E. Boas.—p. 888.
*Syphilitic Disorders of Central Nervous System: C'td. E. Geert-Jørgensen, A. V. Neel and G. E. Schrøder.—p. 894.

76: 909-936 (Sept. 7) 1933

*Syphilitic Disorders of Central Nervous System: C'cn. E. Geert-Jørgensen, A. V. Neel and G. E. Schrøder.—p. 912.
*Progressive Lipodystrophy. K. Brøchner-Mortensen.—p. 922.
Occurrence of Leprosy in Scandinavian Countries Since 1900. A. Kissmeyer.—p. 929.

Syphilitic Disorders of Central Nervous System.—Geert-Jørgensen and his associates discuss the clinical symptoms and serologic changes in about 900 cases of dementia paralytica on their first hospitalization and in other cases of syphilitic mental disorder or mental disturbances in patients having syphilis, with especial attention to the possibility of bringing about earlier treatment of at least part of the cases of dementia paralytica. They state that there is usually a preparalytic stage: in two thirds of the cases of dementia paralytica, in men and in women, symptoms of a change in the patient's mental attitude in daily life were seen for from three months to three or four years. Every noticeable psychic change in persons between 35 and 45, especially if there is any information of syphilitic infection, should arouse suspicion of a beginning dementia paralytica (Wimmer). A negative Wassermann reaction in the blood of an older patient with syphilis does not testify against a developing paralytic process, and changes in the patient's mental attitude should be watched for. In the objective examination, especial attention should be paid to changes in the pupils, disturbances of speech, fibrillation about the mouth and of the tongue, facial expression and changes in reflexes. In suspected beginning paralysis or in case of doubt, examination of the spinal fluid is advised. The paralytic changes consist of those due to inflammatory reactions and those due to destruction of nervous elements, the latter causing the permanent psychic defect. Examples are given to show that these changes are not always parallel, and the dissociation between the serologic picture and the clinical picture is particularly evident in the fever-treated cases. Treatment of a beginning dementia paralytica with the usual antisyphilitic agents is not only useless but causes the time for fever treatment to be missed and gives the paralytic process a chance to produce irreparable damage in the central nervous system. For good and lasting results in the treatment of dementia paralytica, treatment as early as possible, preferably in the preparalytic stage, is urged.

Progressive Lipodystrophia.—The father and a paternal aunt of Brøchner-Mortensen's patient, a woman aged 21 and presenting typical Simon's progressive lipodystrophia, are reported to have had a similar disease when young and to have regained a normal appearance in their late twenties. The case is accompanied by some ovarian hypofunction, slight hypertrichosis and petit mal.